PURCHASING

DECEMBER, 1940.....CONTENTS

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WILKES-BARRE, PENNSYLVANIA

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Green Signifies Full Speed Ahead for National Preparedness

AMERICAN CHAIN & CABLE COMPANY, Inc.

When writing American Cable Division please mention Purchasing

LEADERSHIP FOR DEFENSE



PRODUCTION for defense requires time, as every practical industrialist knows, and no thoughtful observer has criticized the progress reports on that score. Time can not be manufactured or decreed.

Purchasing for defense requires centralized responsibility. That centralization was immediately available in the offices of the Assistant Secretaries of War and the Navy, who are charged with a continuing responsibility for national defense as a part of their regular job, and were prepared to go on with it under the emergency provisions of the Industrial Mobilization Plan.

The present program is an in-between measure, too big to be handled by the current procurement divisions of the Army and Navy, but without the declaration of war emergency which would invoke the Industrial Mobilization Plan. The development of a special organization was a logical step, and the chief controls contemplated by Industrial Mobilization have been embodied in various phases of legislation and executive order. But the effect of that step, so far, has been to curtail the authority of Army and Navy procurement officers without establishing a clear-cut center of responsibility and authority to take their place. That situation can and should be remedied at once.

At the time this page is written, the National Defense Commission is still nominally advisory, and has no chairman or focal point of responsibility other than the President, in his dual role of Chief Executive Officer of the nation and Commander-in-Chief of its armed forces. We have coordinating agencies galore, but no one to coordinate the coordinators with the responsibility and authority to reconcile the conflicting elements in their effort to reach a common objective. So long as the Army, the Navy, the Treasury, and the Defense Commission are permitted, or forced, to argue matters of personal authority, the defense program can proceed only on a halting and uneven course.

We have the resources, the talent, and the will to go ahead. The personnel is earnest, intelligent, and eager to do a job. Either the military organization or the civilian commission is capable of administering the program effectively, given the opportunity. But the program itself lacks a responsible head for procurement, armed with a clear-cut definition of his function and the authority to translate plans into prompt and efficient action. Purchasing for national defense is a vital concern. It needs and deserves vital leadership organization.

Stuart F. Heinritz

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1 EVERYTHING IN STEEL

Ryerson carries the largest and most complete steel stocks in America . . . carbon steels, alloys, stainless, etc., in every size, shape and form . . . a ready, reliable source of supply.

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Ryerson Certified Uniform High Quality Steels meet exacting, narrow range specifications . . . an important advantage, especially with alloy steels, where chemical content, heat-treating response and other characteristics must be known with certainty to assure best results in less time.

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Bars
Plates (15 kinds)
Sheets (25 kinds)
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Stainless
Shafting
Mech. Tubing
Boiler Tubes
Welding Rod
Babbitt, Solder
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Nails, Rivets, etc.

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Joseph T. Ryerson & Son, Inc. Plants at: Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Buffalo, Cleveland, Boston, Philadelphia, Jersey City.

RYERSON *Certified* STEELS

When writing Joseph T. Ryerson & Son, Inc. please mention Purchasing

W. T. STEWART

Purchasing Agent



Mr. Stewart has devoted his entire business career since boyhood to the service of The Pullman Company, and all but the first few months to its purchasing.

It was as an office boy in the general auditor's office that Mr. Stewart entered The Pullman Company ranks, on March 13, 1896. After nine months there, on January 1, 1897, he was transferred to the position of mail clerk in the Purchasing Department, in which he has served continuously since then. During his first seven years in this department he handled in turn all of the various phases of its office work, except stenography, attaining the official title of Clerk on January 1, 1899. Thereafter Mr. Stewart's important promotions were to the following posts: May 1, 1904, Assistant to the Purchasing Agent; March 1, 1907, Assistant Purchasing Agent; April 1, 1911, Purchasing Agent. Perhaps this climb up the purchasing ladder is partly due to the fact that his ancestors were Scotch.

HOW THE PULLMAN COMPANY BUYS

BY HERBERT E. FLEMING

WHEN you fasten the thick curtains and slide down between the fresh sheets under the brown blankets in your Pullman berth, do you ever visualize the purchasing required for the operation and the repair of the 7,052 Pullman cars in service over the railroads of North America?

If ever, as your train starts rolling along, you are disposed to count sheep, you might, in case you are a "P.A.", do something else. You might start dreaming by counting the $11,000,000 or so of purchases made annually by The Pullman Company to keep those cars in condition and running for your comfort and convenience on business and personal trips.

Centralized buying in Chicago for 81 Pullman storerooms for materials in 50 cities, 10 Pullman laundries in as many cities, 6 Pullman car-repair shops in 6 cities, and 39 Pullman commissary depots in 30 cities, except for decentralized purchasing of perishables and minor and emergency buying of materials—that is the outstanding fact about the organization and methods of The Pullman Company. This is the Pullman company proper, the operating subsidiary of Pullman, Incorporated.

Likewise centralized purchasing at Chicago is the practice of the Pullman-Standard Car Manufacturing Company, the manufacturer subsidiary of Pullman, Incorporated, with a purchasing budget that runs three or four times as large as that of the operating company. But that is entirely separate in personnel, organization and detailed method. It is another story.



L. C. ARMFIELD

Commissary

Mr. Armfield is a native of Greensboro, N. C., with 1776 and 1812 war ancestry. He got his first job, after leaving school, as a clerk in a home-town hotel cigar stand. Next, he operated, also at Greensboro, the first telephone switchboard south of the Mason and Dixon line, worked in the telephone business for nine years, and in electrical contracting for two. In 1906 he went to Mexico City, supervising with three others the installation of the first underground telephone service in Mexico. He entered the service of The Pullman Company in the fall of 1907 as a conductor, and for four years had the run between San Antonio and Mexico City. He was on the second restaurant car to enter Mexico. In 1911 he became District Commissary at San Antonio, handling troop movements in the mobilizations of 1911 and 1916. In the latter year he was appointed a Commissary Inspector, working out of the Chicago office, and throughout the World War assisted in keeping cars moving in all parts of the country. He also helped ferry the first passenger train from Key West to Havana.

On April 1, 1926, Mr. Armfield was appointed Acting Commissary, and on September 1, 1927, Commissary. Incidentally, for the current year he is President of the American Association of Superintendents of Dining Cars, an organization which devotes much attention to problems of purchasing.

■ ■ ■

The accompanying map shows the far-flung condition of the requisitioning and receiving points for which purchasing by The Pullman Company is done at Chicago. It is keyed: S, for storerooms; L, for laundries; R for repair shops; and C, for Commissary stores.

The headquarters for the purchasing for nation-wide delivery to these points are in rented offices at 220 South State Street, in the heart of Chicago's "Loop District," readily accessible to representatives of many suppliers. This is a prominent location on that city's famous retail shopping street, even though all Pullman purchases are at wholesale. There the Purchasing Agent, the Commissary, and the General Storekeeper have offices, on separate floors. In April, 1931, their offices were moved to State Street from the Pullman Building at Michigan Avenue and Adams Street, an artistic but ancient and crowded structure, in order to make room for general-office departments not having so many callers as the Purchasing Department.

A Large Purchasing Program

At the head of this buying for The Pullman Company is W. T. Stewart, the Purchasing Agent. By consulting the Railway Guide you will see his name listed among the officers of the "executive department and system services" of the Company. That reflects the recognition of the independent status and responsibility which best practice accords to a Purchasing Agent.

L. C. Armfield, the Commissary, and F. S. Rick, the General Storekeeper, are listed in the Guide as in the Operating Department, reporting to Vice-President Carry. Mr. Armfield okays or turns down the requisitions to the Purchasing Agent from the District Commissaries and Commissary Agents for non-perishables, and directs their decentralized purchasing of perishables, for the Pullman restaurant cars. Mr. Rick approves or disapproves the requisitions to the Purchasing Agent from the above-mentioned Pullman storerooms, laundries and car-repair shops.

The figures on the total purchases of The Pullman Company include car-parts used in repairs, but not new cars, purchased from its big-brother affiliate, the Pullman-Standard Car Manufacturing Company. That the totals average more than $11,000,000 a year is shown by the following table covering the last five calendar years:

Year	From Many Companies	Car-Parts From Pullman-Standard	Total
1939	$ 9,182,005.05	$1,951,593.81	$11,133,598.86
1938	6,926,076.35	1,644,074.71	8,570,151.06
1937	11,580,177.02	3,381,952.24	14,962,129.26
1936	9,837,288.48	3,961,848.42	13,799,136.90
1935	9,904,658.87	1,416,756.31	11,321,415.18

Of these, the local purchases averaged a little less than $300,000 a year.

The kinds and numbers of Pullman cars for which this $11,000,000 a year of buying is done are shown in the following, from an official report:

Standard cars (Sleeping, club, lounge, restaurant, entertainment, and private)	5,467
Lightweight cars	288
Standard parlor cars	606
Dining cars	2
Tourist sleeping cars	689
Total	7,052

Contrary to popular belief the cars that are exclusively full-size diners, except for the two named in the foregoing table, are owned and operated by the railroad companies, not by The Pullman Company, although many of these are made for the railroads by Pullman-Standard Car Manufacturing Company. But about 500 of the above standard Pullman cars are in part equipped for serving meals—so-called restaurant cars, and buffet, broiler, lounge and club cars. These are operated by The Pullman Company.

For them the Commissary gets non-perishables through the Purchasing Agent and supervises the purchase of perishables by the District Commissaries and Commissary Agents. The main part of the buying by the Purchasing Agent, however, is for the maintenance and operation of the other 6,500 and more cars.

Incidentally the "car miles" of operation by The Pullman Company in 1939 aggregated 825,745,133. Revenue passengers numbered 15,655,135. Of these 11,549,947 were berth, and 4,105,188 were seat, passengers. These figures bring right home to all of us the intimate effect of the work of the Purchasing Agent of The Pullman Company.

Requirements Are Varied

A few figures on items directly touching the passenger give an idea of the magnitude of the job confronting the Purchasing Department.

A total of 8,357,157 pieces of linen—2,274,862 sheets, 1,822,805 slips, 3,383,345 hand-towels, and 976,145 miscellaneous pieces—was on hand October 26 last, according to an inventory taken on that date. This covered the linen both on cars and in storerooms, the sheets, slips and towels being as follows:

	On Cars	In Storerooms
Sheets	1,083,060	1,164,802
Slips	843,105	979,700
Hand Towels	1,676,904	1,706,441

During 1939, drinking cups, chiefly paper, to the number of 57,165,000 were purchased. During the same period, for the use of passengers, The Pullman Company purchased 2,784,000 cakes of toilet soap, and 77,106 gallons of liquid soap.

While these purchases of supplies directly affecting the comfort of passengers may be the most vivid, those of steel and other heavy materials for keeping the cars in good running order mount up to huge sums.

The number of firms and companies with which The Pullman Company does business in making the purchases to maintain its inventory, given in the last annual report as $8,862,817.76, is very large. It is from 2,500 to 3,000. From many of them, of course, the purchases are small. But from more than 600, the annual purchases amount to $1,000 or more.

Reaching the Purchasing Department

Presidents, sales managers, and salesmen of manufacturing and wholesaling concerns calling at Room 1212, the entrance to the Purchasing Department of The Pullman Company, are cordially received. If they have to wait, they are invited to use some comfortable arm chairs; and George A. Kelly, the company's Vice President in charge of Public Relations, has seen to it that on a stand near those chairs there is a supply of attractive folders about Pullman cars and service.

(MORE)

REQUISITIONING AND RECEIVING POINTS FOR CENTRALIZED PURCHASING BY THE PULLMAN COMPANY



Mr. Stewart, in a large corner office containing a table and files filled with samples of various products, is readily accessible to callers with things to sell to the company. Having held every position in the Purchasing Department, he knows the company's requirements intimately. Although direct, he is modest of manner and patient in listening to the stories of those seeking orders.

The Purchasing Agent's force consists of twenty-three employes. W. J. Thorsen, Assistant to the Purchasing Agent, performs the duties indicated by that title; the chief clerk takes care of requisitions from the Commissary; another clerk specializes principally on purchases for the car-repair shops, and a third on those for the districts, while still others handle respectively items used both in district storerooms and in repair shops, such as electrical supplies.

Classification of Materials is Basic Control

A highly-developed catalog is an important tool used constantly in the purchasing, and also in the repair-shop work, the accounting, and the disbursing of The Pullman Company. When first issued the index of this catalog showed that the Company purchased 2,145 items—not counting different sizes. Today this number is very much larger. Each copy of the catalog is a book over 3 inches thick. It is made up of sheets and halftone plates containing pictures of parts, big and little. These pages normally are 8½ x 11 inches in size, although in some cases the sheets are wider and have to be folded. All these sheets and plates are included in a heavy 9 x 12 cover, with screw binder.

The contents of the catalog are divided into sixteen sections, for each of which there is a tab. These sections, in general, follow departmental lines. For example, the material used in the maintenance of trucks, by the Truck Departments at the repair shops in six widely separated cities, and by the mechanics at the district yards in all parts of the country, is included in the Truck Section of the catalog. The cloth and other material used in the repair of seats by the Upholstery Departments at the shops and by the assigned mechanics at the District yards, is in the Upholstery Section. The material used in the repair of car platforms and vestibules, is in the section tabbed "Platform and Vestibule Section." But material used by two or more departments or classes of workmen is in the Miscellaneous Section.

The sixteen sections, besides carrying the respective departmental or other descriptive names, carry letters suggesting those names, as aids to the memory of each man concerned. Here is the list of sections and their mnemonic symbols:

Body Brake	Sec.	B
Car Cleaning	Sec.	C
Light and Electrical	Sec.	E
Body Frame	Sec.	F
Glass	Sec.	G
Heating System	Sec.	H
Paint	Sec.	L
Miscellaneous	Sec.	M
Platform and Vestibule	Sec.	P
Small Tools	Sec.	Q
Car Supplies and Equipment	Sec.	S
Truck	Sec.	T
Upholstery	Sec.	U
Water System	Sec.	W
Trimmings and Interior Finish	Sec.	Y
Floor Covering	Sec.	Z

Figure 1. Requisitions for material are made in quadruplicate and are addressed to the General Storekeeper. The two file copies (white and pink) contain information regarding stocks on hand and current rates of use. On the buff and blue copies, this space is replaced by a detachable acknowledgment slip. The latter copies are sent by the General Storekeeper to another storeroom, if the material is available for transfer, or to the Purchasing Department if a purchase of the material is required. The buff acknowledgment slip is returned to the General Storekeeper to show that shipment has been made from stores or that an order has been placed. The blue copy is used as a manifest with shipments from one storeroom to another.

Figure 2. Purchases involving a major expenditure for changes or retirement of property must have the prior recommendation of operating superintendents and the approval of executives. The request for this authority is supported by a breakdown of the costs involved.

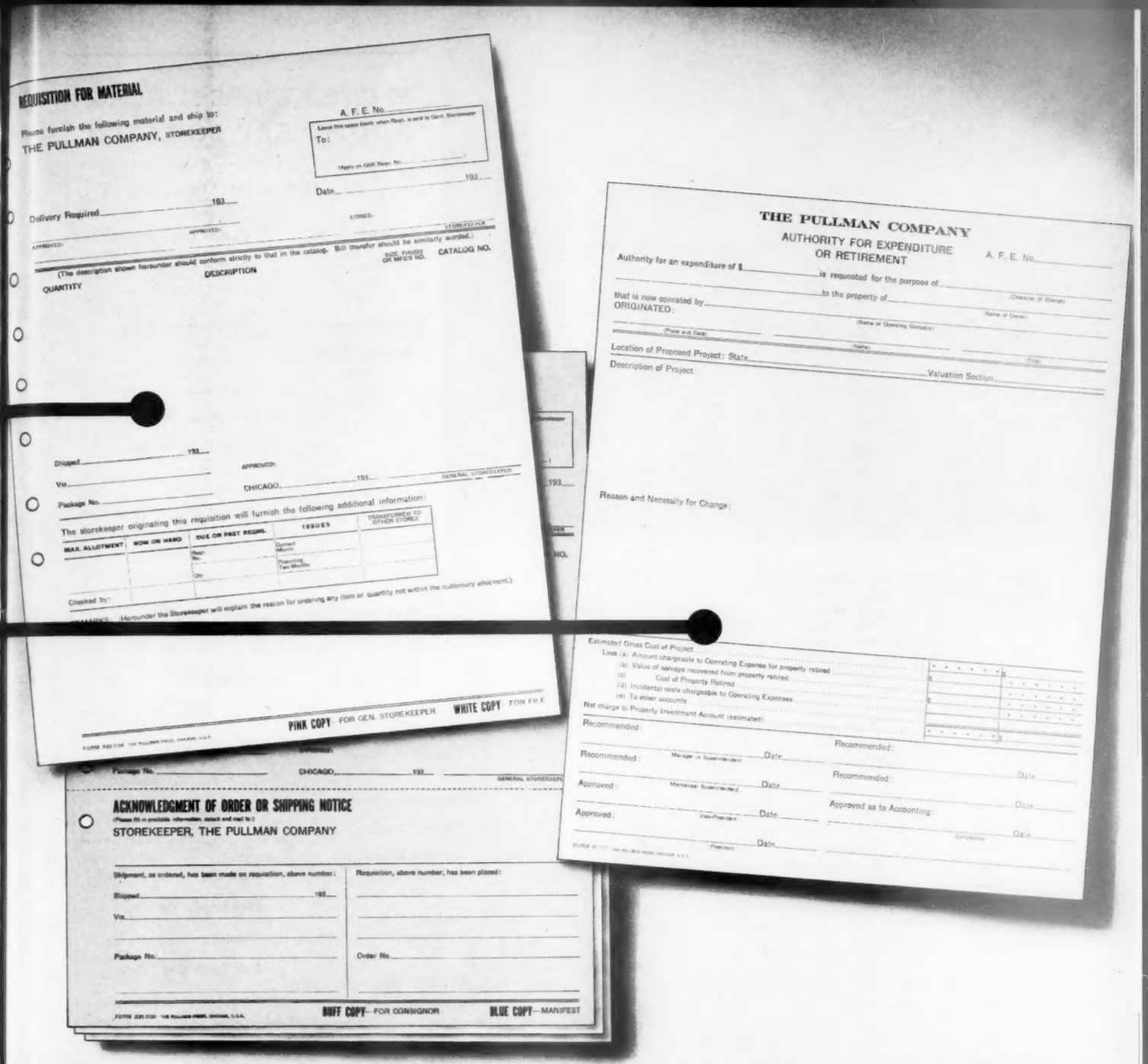
Each item in the catalog, besides having a standard name, has a catalog number. This number is preceded by the letter symbolizing its section.

The name of each set of assembled parts appears in capital letters; then the names of sub-assemblies and of parts appear, also in capitals, indented one or two places to the right. The catalog numbers are set up in parallel columns so as to show conveniently when material is interchangeable between two or more types of equipment. On each sheet giving the names and catalog numbers of assemblies and parts there appear in a column at the right, for easy reference, the numbers of the plates containing illustrations of them.

When this catalog went into effect seventeen years ago, the general order regarding its terms, said: "All other conflicting terms, nomenclature, and designations will be disregarded contemporaneously." **(MORE)**

Figure 3. Requests for quotations provide a standard form on which bids are entered, making for ease and convenience in comparison.

Figure 4. The purchase order is a five-part form, the white original going to the vendor and the buff duplicate copy for the Pullman auditor of disbursements. The three file copies are on blank sheets of light-weight paper: white for the purchasing department, blue for the district or shop storekeeper, and pink for the testing and inspection department.



REQUISITION FOR MATERIAL

Please furnish the following material and ship to:
THE PULLMAN COMPANY, STOREKEEPER

A. F. E. No.

Leave this space blank when Reqn. is sent to Gen. Storekeeper

To:

(Apply on O&M Reqn. No.)

Date 193

Delivery Required 193

APPROVED: APPROVED: ISSUED: STOREKEEPER

(The description shown hereunder should conform strictly to that in the catalog. Bill therefor should be similarly worded.)

QUANTITY | DESCRIPTION | SIZE, FINISH OR MFG'S NO. | CATALOG NO.

Shipped 193

Via

Package No.

APPROVED:

CHICAGO, 193 GENERAL STOREKEEPER

The storekeeper originating this requisition will furnish the following additional information:

MAX. ALLOTMENT	NOW ON HAND	DUE OR PAST REQMS.	ISSUES	TRANSFERRED TO OTHER STORES
		Reqn. No.	Current Month	
		Qty	Preceding Two Months	

Checked by:

REMARKS: Hereunder the Storekeeper will explain the reason for ordering any item or quantity not within the customary allotment.)

PINK COPY— FOR GEN. STOREKEEPER WHITE COPY— FOR F.E.

FORM X83 ISM THE PULLMAN PRESS, CHICAGO, U.S.A.

Package No. CHICAGO, 193 GENERAL STOREKEEPER

ACKNOWLEDGMENT OF ORDER OR SHIPPING NOTICE

(Please fill in practicable information, detach and mail to:)

STOREKEEPER, THE PULLMAN COMPANY

Shipment, as ordered, has been made on requisition, above number:

Shipped 193

Via

Package No.

Requisition, above number, has been placed:

Order No.

BUFF COPY— FOR CONSIGNOR BLUE COPY— MANIFEST

FORM X85 ISM THE PULLMAN PRESS, CHICAGO, U.S.A.

THE PULLMAN COMPANY

AUTHORITY FOR EXPENDITURE OR RETIREMENT

A. F. E. No.

Authority for an expenditure of $ is requested for the purpose of (Character of Charge)

that is now operated by to the property of (Name of Owner)

ORIGINATED: (Name of Operating Company)

(Place and Date) (Name) (Title)

Location of Proposed Project: State

Description of Project: Valuation Section

Reason and Necessity for Change:

Estimated Gross Cost of Project

Less (a) Amount chargeable to Operating Expense for property retired

(b) Value of salvage recovered from property retired

(c) Cost of Property Retired

(d) Incidental costs chargeable to Operating Expenses

(e) To other accounts

Net charge to Property Investment Account (estimated)

Recommended: Recommended:

Recommended: Manager or Superintendent Date Recommended: Date

Approved: Mechanical Superintendent Date Approved as to Accounting: Date

Approved: Vice-President Date Comptroller Date

President Date

FORM X81 ISM THE PULLMAN PRESS, CHICAGO, U.S.A.

THE PULLMAN COMPANY

OFFICE OF THE PURCHASING AGENT

200 SOUTH STATE STREET TELEPHONE HARRISON 7200

CHICAGO,

Please extend on this sheet your prices to us for material, as specified below, based on our terms, delivered

f. o. b.

NOTE—THIS IS NOT AN ORDER, but a request for prices. Please reply by return mail.

W. T. STEWART, Purchasing Agent

Mention Reqn. Number in Correspondence

REQN.		List Price	Discount from List	Net or Unit Price

THE PULLMAN COMPANY

OFFICE OF THE PURCHASING AGENT
200 SOUTH STATE STREET
CHICAGO, ILL.
W. T. STEWART, PURCHASING AGENT

P. A. Order No.

This order is placed with you on the express condition that delivery of goods will be made as specified.

All materials furnished will be subject to test and inspection, and if rejected for cause will be held subject to order of shipper.

PACKAGES MUST BE MARKED WITH OUR ORDER AND REQUISITION NUMBERS.

Please supply, for account of this Company, the goods enumerated below and ship them to THE PULLMAN COMPANY,

Care

Req'n

This order is given on the express condition that the seller, in consideration of this order and by accepting and filling same, agrees to and will protect and save harmless the purchaser of the articles furnished and sold on this order from any and all complaints, costs, expenses, suits or judgments, or damages, of any kind whatsoever, arising out of the infringement or alleged infringements of patents owned by others, and further agrees that if any such claims of infringement shall be made, then the purchaser may exercise visibility in respect of any and all patents which the seller claims, or may and shall claim, to authorize the manufacture and use of the articles below or any of them.

THE NUMBER CLOSING THE DESCRIPTION OF EACH ITEM IS OUR CATALOG NUMBER. PLEASE SHOW IT ON YOUR INVOICE



Figure 5. Invoices are required in triplicate, on the Simplified Invoice Form, which is arranged to facilitate and control checking and accounting procedure. The company furnishes these forms where required, and about one-third of the invoices are received on the company's own form.

Watching for Obsolescence

Even at that time many of the sheets contained "X" columns in which the regular catalog numbers were preceded by that letter. This was to designate obsolete material or material of types "rapidly going out of existence."

In recent years the number of items has increased still more rapidly. The introduction of light-weight, stream-line, air-conditioned cars, while many of the older cars still have useful life, has multiplied the catalog numbers. The further development of new features in Pullman cars, to meet the competition of airplanes, buses, and modernized coaches owned by the railroads, promises to make this catalog get still bigger and bigger.

But back in 1923 the "Foreword to the Catalog of Material and Supplies" for The Pullman Company stated, in the opening paragraph, that the purchasing and storage of material and supplies for the repair and operation of Pullman cars, always a large problem, had increased. "In recent years," it said then, "the problem has become more acute by reason of the improvements constantly being made in the Pullman car." It said further:

"Some of these improvements are of such major nature that they can only be applied in the construction of a car; or when the car is undergoing general repair; others, while important, can be applied to all equipment as nearly simultaneously as the availability of the cars permits; but all leave behind them an accumulation more or less, of materials no longer standard."

This "Foreword" was issued by the late E. F. Carry,

50 CITIES WHERE 81 STOREROOMS ARE LOCATED

(Symbol S on Map)

Albany, N. Y.

Atlanta, Ga.
Terminal
Southern

Birmingham, Ala.

Boston, Mass.
Dover
Exeter
Haverhill

Buffalo, N. Y.

Chicago, Ill.
Carpet Room and Mechanic Shop
B. & O.
Rock Island
Root St.
Santa Fe
Western Ind.
So. I. C.
N. P.
C. B. & Q.
C. M. & St. P.
Penn
C. & N. W.
General Store

Cincinnati, Ohio
Lit. Miami

Cleveland, Ohio
Main

Columbus, Ohio

Dallas, Tex.

Denver, Colo.
N. P.
C. & S.

Detroit, Mich.
Wabash
M. C.

El Paso, Tex.

Fort Worth, Tex.

Hoboken, N. J.

Houston, Tex.

Indianapolis, Ind.

Jacksonville, Fla.

Jersey City, N. J.
South

Kansas City, Mo.
Santa Fe
Terminal

Los Angeles, Calif.
Santa Fe
So. Pac.
N. P.

Little Rock, Ark.

Louisville, Ky.

Memphis, Tenn.
Union

Mexico City, Mexico

Miami, Fla.
F. E. C.
S. A. L.

Minneapolis, Minn.
Omaha
Rock Island

Montreal, Canada

Nashville, Tenn.

New Orleans, La.
I. C.
L. & N.

New York, N. Y.
N. Y. C.
Penn. Ter.

Norfolk, Va.

Oakland, Calif.
So. Pac.
West. Pac.

Omaha, Neb.
C. B. & Q.
C. & N. W.

Philadelphia, Pa.
East: P. & R.
West: P. R. R.

Pittsburgh, Pa.
P. R. R.
P. & L. E.

Portland, Ore.

Richmond, Va.

Roanoke, Va.

Salt Lake City, Utah

San Antonio, Tex.
I. & G. N.
M. K. & T.

San Francisco, Calif.
King St.

St. Louis, Mo.
Jefferson
Rankin
21st St.

St. Paul, Minn.
N. P.

St. Petersburg, Fla.

Seattle, Wash.

Tacoma, Wash.

Tampa, Fla.

Toronto, Canada

Washington, D. C.

predecessor of D. A. Crawford, the President. It is still in the catalog, because it accurately describes its contents. Moreover, to the outside observer it ranks high as a statement affecting fundamentals of storekeeping and consequently purchasing. For example, it says:

"It is possible, under the operating conditions of the Company, to amass a stock of material and supplies altogether out of proportion, in both quantity and value, with the number of cars to be served. This is done at shops when the storekeeper is not constantly in touch with the repair programs; and when old stock is retained after standards have been changed.

"At the district yards it is largely due to the maintenance of a stock of materials not justified by the amount which previous experience shows to be necessary for current issues; to the accumulation of a class of material not in use on the district; and to the retention of material no longer standard, or no longer used by the equipment on the district.

"Excess stocks are also the result of improper nomenclature. When material used at many different shops and district yards is described by as many different names, it becomes impossible for the general officers of the stores department to obtain a comprehensive statement of the quantity and value of any particular commodity."

Copies of this catalog, kept up to the minute with the insertion of loose-leaf sheets from the catalog section of the General Storekeeper's office, are in the hands of all the district storekeepers, repair shop superintendents, and laundry managers, as well as the Purchasing Agent and the employes on his force. The catalog is not given to the vendors. Mr. Stewart points out that experience with loose-leaf catalogs in many fields has shown that they are not kept up outside of the respective organizations issuing them. But the Pullman catalog numbers are given to suppliers for the respective items they offer to The Pullman Company, and the vendors enter the Pullman numbers in which they are interested in their own records.

For the convenience of the Pullman people some of the sheets in the Company's catalog contain, opposite their own numbers, the catalog numbers of accredited suppliers.

How thoroughly the Pullman purchasing of material and supplies for the District storerooms, repair shops, and laundries is centralized may be understood by noting the limit of the amount that any one of them can spend directly. This limit is $50. Exception is made in case of emergencies, but even then the transactions must go through the Purchasing Agent. They frequently involve telegraphing and long distance telephoning.

Standard Procedure

Some idea of the procedure involved in The Pullman Company purchases of material and supplies for the repair and operation of cars may be obtained from consideration of the accompanying forms:

Form X 93.1154—Requisition for Material.
Form 91.173—Authority for Expenditure or Retirement.
Form 72.16—Request for Prices.
Form X7.81—Record of Prices.
Form 72.17—Order.
Form 91.214—Standard Invoice.
Form 91.29—Monthly Scrap Report.

The district storekeepers, the repair-shop storekeepers, and the laundry managers make estimates of the quantities of the various items they require. The General Storekeeper checks on the status of their stocks; and the engineering and mechanical departments do so in case prospective obsolescence is involved.

For the ordinary run of supplies the storekeepers at the eighty storerooms over the country use Form X 93.1154, but in case a major project is involved there is first use of Form 91.173, going up through the Mechanical Superintendent, a Vice-President, and the President.

Of the former, the ordinary "Requisition for Material," there are four copies made: buff—for the consignor; blue—the manifest, used on shipments from one storeroom to another; pink—for the General Storekeeper; white—for the originator's file.

The original of a given storekeeper's requisition, after approval by the General Storekeeper, goes either to the Purchasing Agent or to another storekeeper. It follows the latter course when the General Storekeeper knows that there is available at a second and neighboring storeroom, or even one at a distant city, an excess supply of the item requisitioned.

When Mr. Stewart places a blanket order, he uses his regular correspondence letter-head. But when, on the basis of a requisition received, there is immediate need of shipment, he uses the "P.A. Order"—form 72.17. The box in its upper left-hand corner is something which the vendor cannot fail to notice. It says:

"This order is placed with you on the express condition that delivery of goods will be made as specified. All materials furnished will be subject to test and inspection, and if rejected for cause will be held subject to order of shipper. Packages must be marked with our order and requisition numbers."

This order is typed in quintuplicate; two copies on the printed form, one on white for the vendor, one in buff for the Pullman auditor of disbursements; and three copies on blank sheets: a white for the Purchasing Agent's file, a blue for the district or shop storekeeper, and a pink for the testing and inspection department.

Checking the Invoices

When it comes to invoicing, about thirty-five per cent of the concerns selling to The Pullman Company use the Form 91.214, a triplicate form furnished by that company. This is a standard form gotten up several years ago, sponsored by the National Association of Purchasing Agents, approved by the Interstate Commerce Commission, and used by most of the railroads. The shippers who use their own forms for invoices on sales to The Pullman Company have worked out adaptations of this form. The three copies of this form, with bills of lading or shipping receipts attached, come to the Purchasing Agent.

After the Purchasing Agent's office has checked them, one copy—that marked "Duplicate"—is sent to the auditor of disbursements, and the two copies marked "Original" and "Storekeeper's Record" are sent to the various sources of the requisitions. In the case of the district storerooms, the copy marked "Original" goes first to the district storekeeper, and that marked "Storekeeper's Record" goes to the general storekeeper. The district storekeeper signs and ap-

proves the "Original" and returns it to the general storekeeper, who in turn sends it to the auditor of disbursements. In the case of the repair shops, both the "Original" and the "Storekeeper's Record" go first to the shop accountant, who sends them to the shop storekeeper. The shop storekeeper retains the "Storekeeper's Record," signs and returns the "Original" to the shop accountant, who forwards it to the auditor of disbursements. Similar practice is followed by the managers of the Pullman laundries.

In each case the auditor of disbursements checks the copy he has with that returned. When, however, in order to receive the cash discount, it is necessary for him to make payments before receiving the returned copy, he does so. The Pullman Company always takes the cash discounts.

Careful inspection for quality is carried on in connection with the purchasing of The Pullman Company. Many items, especially the heavy ones such as wheels and springs, are inspected at the manufacturers' plants by Pullman engineers. Other items, such as carpets, have to stand up in inspection at the Company's Testing Laboratory, in Chicago. Both the inspectors who visit manufacturers' plants and the engineers at the Laboratory are under the Engineer of Tests who in turn is under the direction of the Chief Engineer. For standard commercial items the inspection by the storekeepers is sufficient.

Scrap Disposal Is An Important Function

The recovery of good dollars from the sale of scrap is an important feature of the functions of the Purchasing Agent of the Pullman Company.

"In the old days of the wooden cars," said Mr. Stewart, "when they got worn out, we used to run them onto sidings and burn the wood off; then sell the steel. The wooden cars are all gone now, but with the changes to the new light-weight cars the older ones become obsolete and have to be dismantled. So, after taking off the usable parts, we still have much scrap to sell—especially steel."

The "Monthly Scrap Report," Form 91.29, addressed to the Purchasing Agent, is one of the most elaborate in Mr. Stewart's list. Under "Scrap Iron and Steel" it lists twenty items, such as "Axles—Steel car," and "Brake beams—uncut." For many of the items detailed definitions are given. "Turnings, Steel," for example, is followed by this: "Includes turnings from axles and wheels and other similar steel, including hard steel; clean, free from other metals and lumps." "Melting Steel, Heavy No. 1," is described in part this way: "Steel scrap ¼ inch and over in thickness, not over 18 inches in width, and not over 5 feet long. Individual pieces must be cut into such shape that they will be free from attachments and will lie reasonably straight in a charging box." The last nine words are underscored, in the form.

Similar listing for brass, copper, lead and other materials is provided for under "Miscellaneous Scrap Metals." Under "Miscellaneous Scrap Materials" are listed Barrels and Drums—Wooden and Steel, hair sweepings, and under the 40th heading on the list, "Rags": Cotton and wool, small pieces and cuttings of carpet, plush and "pantasote" (a window curtain that is leather on the outer side and silk on the inner), and leather upholstery.

Opposite each of the forty items on the scrap report are three columns. For the scrap iron and steel these are headed:

"Quantity on hand not sold (tons)," "Quantity Sold and Not Shipped; to whom sold and date (car loads)" and "Quantity which will accumulate during next 30 days (tons)."

For the miscellaneous scrap headings, the figures called for are put in pounds instead of tons.

This careful sorting of the scrap into forty classes as a rule makes possible direct shipment to the users. It saves freight and hauling. The use of this form reflects a thorough-going procedure for the control and profitable disposal of scrap.

Commissary Buying

There is a rather sharp contrast between the purchasing material and supplies for the maintenance of all the Pullman cars and the purchasing of commissary supplies for service to passengers in those cars which are each about half restaurant or cafe and half sleeping, lounge, club, or parlor car. "Take the difference between a polish and a cigar," said Mr. Stewart. "You can tell an operator to use a certain polish. But you can't tell a passenger to smoke a certain cigar. The passenger wants the cigar he wants."

The cars for which Mr. Armfield, the Commissary, sends purchase requisitions to Mr. Stewart for such things as crockery, table-ware, smoked meats, canned goods, bottled beverages, and cigars, and for which the Commissary directs the District Commissaries and Commissary Agents in their local purchases of perishables, such as fruits and fresh meats and vegetables, are as follows:

Buffet, broiler, lounge, club cars	331
Restaurant cars in the United States	61
Restaurant cars in Mexico	13
Private cars	20

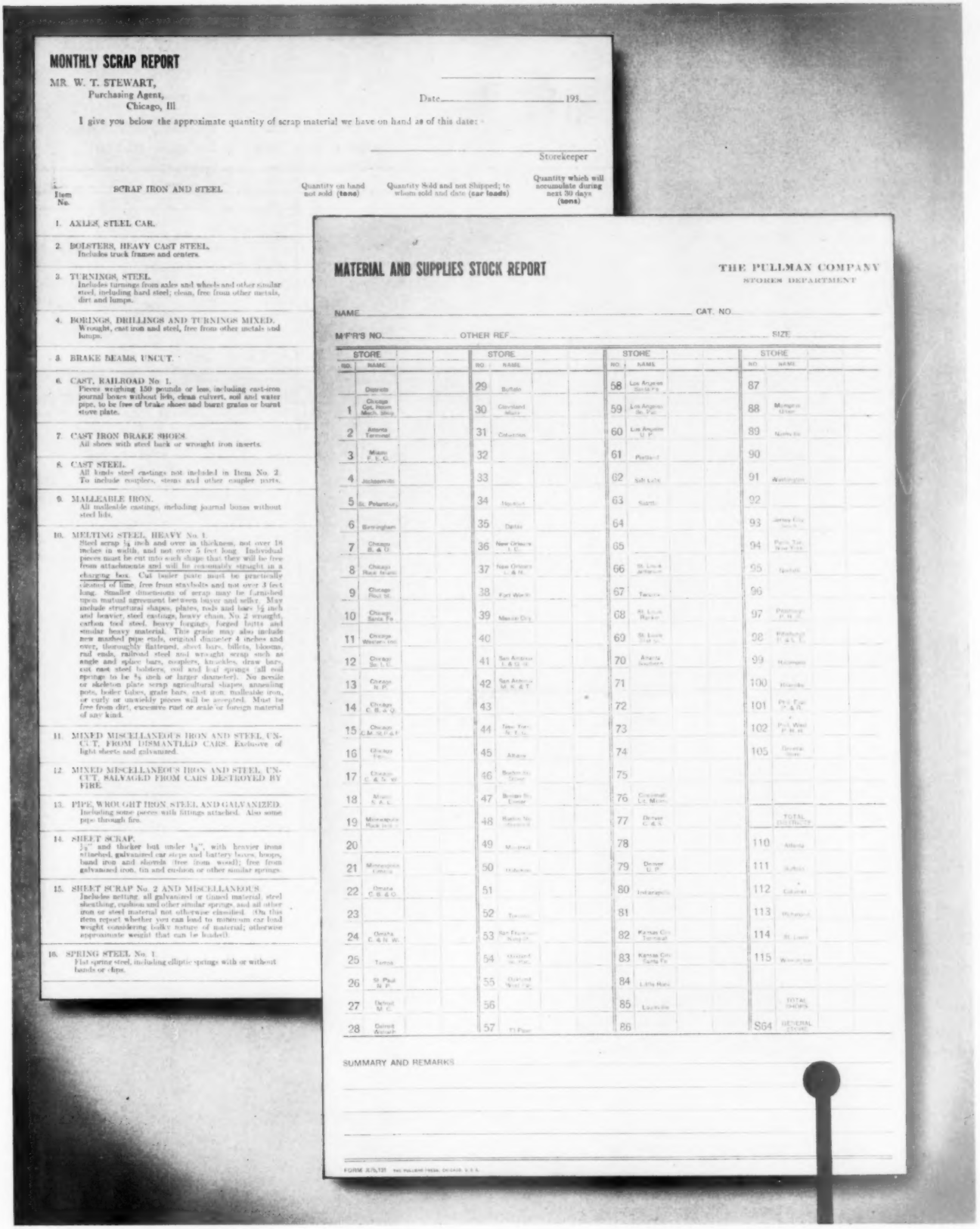
That was the average number operated by the Commissary in January, but the total is often 500. Private cars are used extensively by such parties as those going to the Derby at Louisville on May 4.

The restaurant and private cars, and some of the buffet, broiler, lounge and club cars are equipped with ranges, but the latter types of cars often have, instead of a range with oven, merely a "charkett" or charcoal broiler. All have toasters, electric coffee-makers, and refrigerators.

Mr. Armfield's headquarters organization comprises F. W. Scheibe, Instructor in Cuisine; T. Allen, Assistant Commissary; C. G. Rahn and E. A. Haxel, Assistants to the Commissary; twelve clerks and stenographers; and seven field inspectors. There are 852 road-service employes — "attendants," as the waiters and cooks are called, and bus-boys.

Standards of Service

For each car and for the thirty-nine depots or storerooms of the District Commissaries and Commissary Agents there is provided an elaborate loose-leaf book entitled "Repertory for Commissary Employes and Culinary Guide." This contains, besides recipes and illustrations of cuts of meat and of properly loaded service plates, sections on instructions. These include one headed "Marketing for Supplies." The instructor



MONTHLY SCRAP REPORT

MR. W. T. STEWART,
Purchasing Agent,
Chicago, Ill

Date_____ 193__

I give you below the approximate quantity of scrap material we have on hand as of this date:

Storekeeper

Item No.	SCRAP IRON AND STEEL	Quantity on hand not sold (tons)	Quantity Sold and not Shipped; to whom sold and date (car loads)	Quantity which will accumulate during next 30 days (tons)
1.	AXLES, STEEL CAR.			
2.	BOLSTERS, HEAVY CAST STEEL. Includes truck frames and centers.			
3.	TURNINGS, STEEL. Includes turnings from axles and wheels and other similar steel, including hard steel; clean, free from other metals, dirt and lumps.			
4.	BORINGS, DRILLINGS AND TURNINGS MIXED. Wrought, cast iron and steel, free from other metals and lumps.			
5.	BRAKE BEAMS, UNCUT.			
6.	CAST, RAILROAD No. 1. Pieces weighing 150 pounds or less, including cast-iron journal boxes without lids, clean culvert, soil and water pipe, to be free of brake shoes and burnt grates or burnt stove plate.			
7.	CAST IRON BRAKE SHOES. All shoes with steel back or wrought iron inserts.			
8.	CAST STEEL. All kinds steel castings not included in Item No. 2. To include couplers, stems and other coupler parts.			
9.	MALLEABLE IRON. All malleable castings, including journal boxes without steel lids.			
10.	MELTING STEEL, HEAVY No. 1. Steel scrap ¼ inch and over in thickness, not over 18 inches in width, and not over 5 feet long. Individual pieces must be cut into such shape that they will be free from attachments and will lie reasonably straight in a charging box. Cut boiler plate must be practically circular of lime, free from staybolts and not over 3 feet long. Smaller dimensions of scrap may be furnished upon mutual agreement between buyer and seller. May include structural shapes, plates, rods and bars ½ inch and heavier, steel castings, heavy chain, No. 2 wrought, carbon tool steel, heavy forgings, forged butts and similar heavy material. This grade may also include new machine pipe ends, original diameter 4 inches and over, thoroughly flattened, sheet bars, billets, blooms, rail ends, railroad steel and wrought scrap such as angle and splice bars, couplers, knuckles, draw bars, cut cast steel bolsters, coil and leaf springs (all coil springs to be ⅝ inch or larger diameter). No needle or skeleton plate scrap agricultural shapes, annealing pots, boiler tubes, grate bars, cast iron, malleable iron, or curly or unwieldy pieces will be accepted. Must be free from dirt, excessive rust or scale or foreign material of any kind.			
11.	MIXED MISCELLANEOUS IRON AND STEEL, UNCUT, FROM DISMANTLED CARS. Exclusive of light sheets and galvanized.			
12.	MIXED MISCELLANEOUS IRON AND STEEL, UNCUT, SALVAGED FROM CARS DESTROYED BY FIRE.			
13.	PIPE, WROUGHT IRON, STEEL AND GALVANIZED. Including some pieces with fittings attached. Also some pipe through fire.			
14.	SHEET SCRAP. ⅛" and thicker but under ¼", with heavier irons attached, galvanized car steps and battery boxes, hoops, band iron and shovels (free from wood); free from galvanized iron, tin and enclosed or other similar springs.			
15.	SHEET SCRAP No. 2 AND MISCELLANEOUS. Includes netting, all galvanized or tinned material, steel sheathing, cushion and other similar springs, and all other iron or steel material not otherwise classified. (On this item report whether you can load to maximum car load weight considering bulky nature of material; otherwise approximate weight that can be loaded).			
16.	SPRING STEEL No. 1. Flat spring steel, including elliptic springs with or without bands or clips.			

MATERIAL AND SUPPLIES STOCK REPORT

THE PULLMAN COMPANY
STORES DEPARTMENT

NAME_____ CAT. NO._____

M'F'R'S NO._____ OTHER REF._____ SIZE_____

STORE NO.	STORE NAME	STORE NO.	STORE NAME	STORE NO.	STORE NAME	STORE NO.	STORE NAME
	Districts	29	Buffalo	58	Los Angeles Santa Fe	87	
1	Chicago Gen. Repair Mech. Shop	30	Cleveland	59	Los Angeles So. Pac.	88	Memphis Union
2	Atlanta Terminal	31	Columbus	60	Los Angeles U. P.	89	Nashville
3	Miami F. E. C.	32		61	Portland	90	
4	Jacksonville	33		62	Salt Lake	91	Washington
5	St. Petersburg	34	Houston	63	Seattle	92	
6	Birmingham	35	Dallas	64		93	Jersey City Union
7	Chicago B. & O.	36	New Orleans L. C.	65		94	Penn. Sta. New York
8	Chicago Rock Island	37	New Orleans L. & N.	66	St. Louis Jefferson	95	Newark
9	Chicago Post St.	38	Fort Worth	67	Tacoma	96	
10	Chicago Santa Fe	39	Kansas City	68	St. Louis Barker	97	Pittsburgh P. R. R.
11	Chicago Western Ind.	40		69	St. Louis Union	98	Pittsburgh P. & L. E.
12	Chicago So. L. C.	41	San Antonio L. & G. N.	70	Atlanta Southern	99	Wilmington
13	Chicago N. P.	42	San Antonio M. K. & T.	71		100	Riverside
14	Chicago C. B. & Q.	43		72		101	Port Reading P. & R.
15	Chicago C. M. St. P. & P.	44	New York N. Y. C.	73		102	Port Weld P. R. R.
16	Chicago Erie	45	Albany	74		105	General Store
17	Chicago C. & O. W.	46	Boston So. Depot	75			
18	Miami S. A. L.	47	Boston So. Depot	76	Cincinnati Ls. Main		TOTAL DISTRICTS
19	Minneapolis Rock Isl.	48	Boston No. Station	77	Denver C. & S.		
20		49	Montreal	78		110	Atlanta
21	Minneapolis Omaha	50	Milwaukee	79	Denver U. P.	111	Buffalo
22	Omaha C. B. & Q.	51		80	Indianapolis	112	Cincinnati
23		52	Toronto	81		113	Richmond
24	Omaha C. & N. W.	53	San Francisco Ferry Bldg.	82	Kansas City Terminal	114	St. Louis
25	Toledo	54	Oakland So. Pac.	83	Kansas City Santa Fe	115	Washington
26	St. Paul N. P.	55	Oakland West Pac.	84	Little Rock		
27	Detroit M. C.	56		85	Louisville		TOTAL SHOPS
28	Detroit Annex	57	Ft. Erie	86		S64	GENERAL STORE

SUMMARY AND REMARKS

FORM 375,121 THE PULLMAN PRESS, CHICAGO, U.S.A.

Figure 6. Two important monthly reports are those which list the accumulations of scrap material for disposal through the purchasing department, classified under 40 headings, and the summary of materials and supplies on hand at each of the 81 storerooms, giving an accurate overall picture of available supplies of each standard item throughout the system.

TEN CITIES WHERE LAUNDRIES ARE LOCATED

(Symbol L on Map)

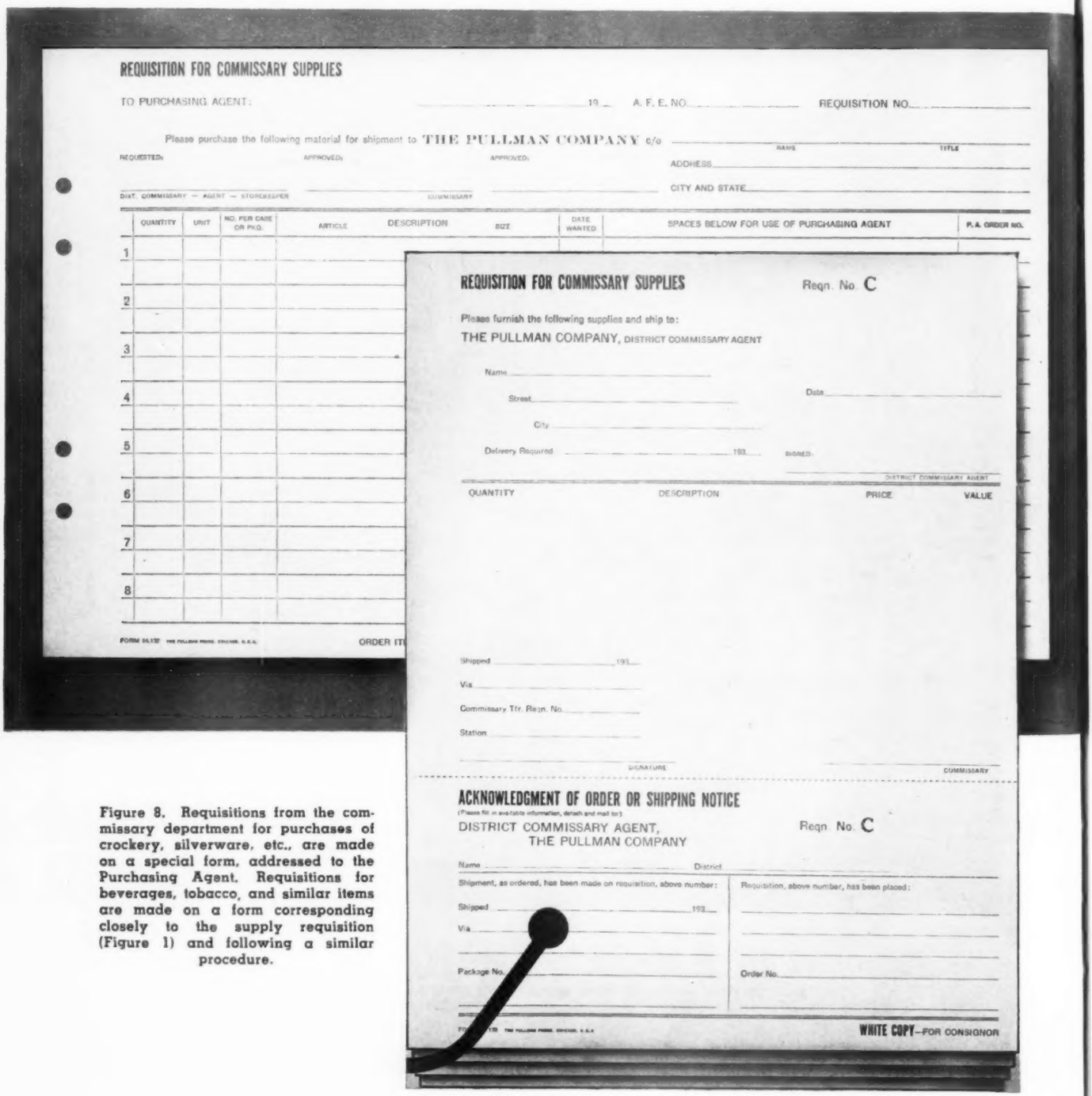
Buffalo, New York	New York City, N. Y.
Chicago, Illinois	Oakland, California
Cincinnati, Ohio	St. Louis, Missouri
Kansas City, Missouri	Tampa, Florida
Miami, Florida	Washington, D. C.

SIX CITIES WHERE REPAIR SHOPS ARE LOCATED

(Symbol R on Map)

Atlanta, Georgia	Richmond, California
Buffalo, New York	St. Louis, Missouri
Pullman, Illinois	Wilmington, Delaware

of cuisine is an expert from Europe, trained in the culinary arts in a college at Lausanne, Switzerland, and through practice at Monte Carlo on the Riviera and the Carlton Hotel, London. He holds classes for



REQUISITION FOR COMMISSARY SUPPLIES

TO PURCHASING AGENT: ____ 19__ A. F. E. NO. ____ REQUISITION NO. ____

Please purchase the following material for shipment to THE PULLMAN COMPANY c/o ____ NAME ____ TITLE

REQUESTED: ____ APPROVED: ____ APPROVED: ____ ADDRESS ____

DIST. COMMISSARY — AGENT — STOREKEEPER ____ COMMISSARY ____ CITY AND STATE ____

	QUANTITY	UNIT	NO. PER CASE OR PKG.	ARTICLE	DESCRIPTION	SIZE	DATE WANTED	SPACES BELOW FOR USE OF PURCHASING AGENT	P. A. ORDER NO.
1									
2									
3									
4									
5									
6									
7									
8									

FORM 04.172 THE FOLLETT PRESS, CHICAGO, U.S.A. ORDER IT

REQUISITION FOR COMMISSARY SUPPLIES Reqn. No. C

Please furnish the following supplies and ship to:

THE PULLMAN COMPANY, DISTRICT COMMISSARY AGENT

Name ____

Street ____ Date ____

City ____

Delivery Required ____ 193__ SIGNED: ____

DISTRICT COMMISSARY AGENT

QUANTITY	DESCRIPTION	PRICE	VALUE

Shipped ____ 193__

Via ____

Commissary Tfr. Reqn. No. ____

Station ____

SIGNATURE ____ COMMISSARY

ACKNOWLEDGMENT OF ORDER OR SHIPPING NOTICE

(Please fill in available information, detach and mail to:)

DISTRICT COMMISSARY AGENT, THE PULLMAN COMPANY Reqn. No. C

Name ____ District ____

Shipment, as ordered, has been made on requisition, above number:

Shipped ____ 193__

Via ____

Package No. ____

Requisition, above number, has been placed:

Order No. ____

FORM 04.173 THE FOLLETT PRESS, CHICAGO, U.S.A. WHITE COPY—FOR CONSIGNOR

Figure 8. Requisitions from the commissary department for purchases of crockery, silverware, etc., are made on a special form, addressed to the Purchasing Agent. Requisitions for beverages, tobacco, and similar items are made on a form corresponding closely to the supply requisition (Figure 1) and following a similar procedure.

PULLMAN

THIRTY CITIES WHERE FORTY COMMISSARY DEPOTS ARE LOCATED

(Symbol C on Map)

Augusta, Ga.

Boston, Mass.
- E. Cambridge
- Dover St.
- Exeter St.

Buffalo, N. Y.

Chicago, Ill.
- 43rd St.
- B&O Yds.
- C&NW Yds.
- I.C. Yds.
- NKP Yds.
- PRR Yds.
- C&WI Yds.

Cincinnati, Ohio

Columbus, Ohio

Detroit, Mich.

El Paso, Tex.
(covers Juarez, Mex.)

Grand Rapids, Mich.

Guadalajara, Jal., Mex.

Jacksonville, Fla.

Kansas City, Mo.

Laredo, Texas

Nuevo Laredo, Tam., Mexico

Los Angeles, Calif.

Mexico City, D. F. Mexico

Minneapolis, Minn.

Mobile, Ala.

Montreal, Que., Canada

New Orleans, La.
- I.C.
- L&N

New York, N. Y.
- Mott Haven
- Penn Terminal, S.S. Yds.
- Long Island, N. Y.

Nogales, Son., Mex.

Philadelphia, Pa.

Pittsburgh, Pa.

Portland, Ore.

St. Louis, Mo.

San Antonio, Texas

San Francisco, (Oakland) Calif.

Washington, D. C.

Wilmington, N. C.

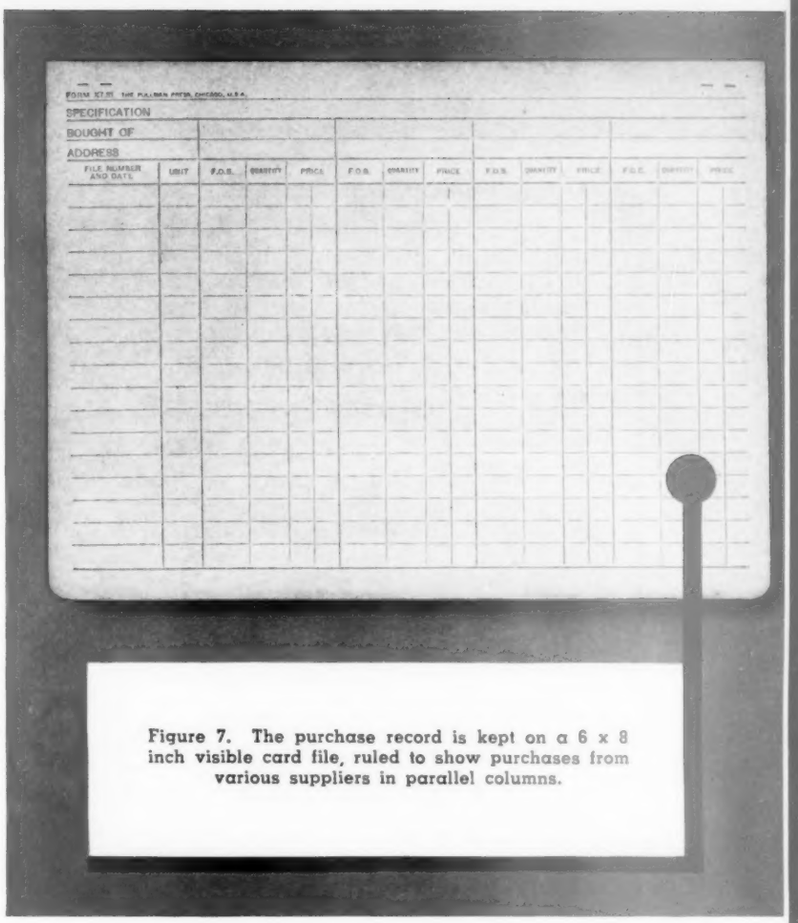


Figure 7. The purchase record is kept on a 6 x 8 inch visible card file, ruled to show purchases from various suppliers in parallel columns.

each crew of road-service employes three times a year, and these classes include instruction on the part of their duties involved in purchasing.

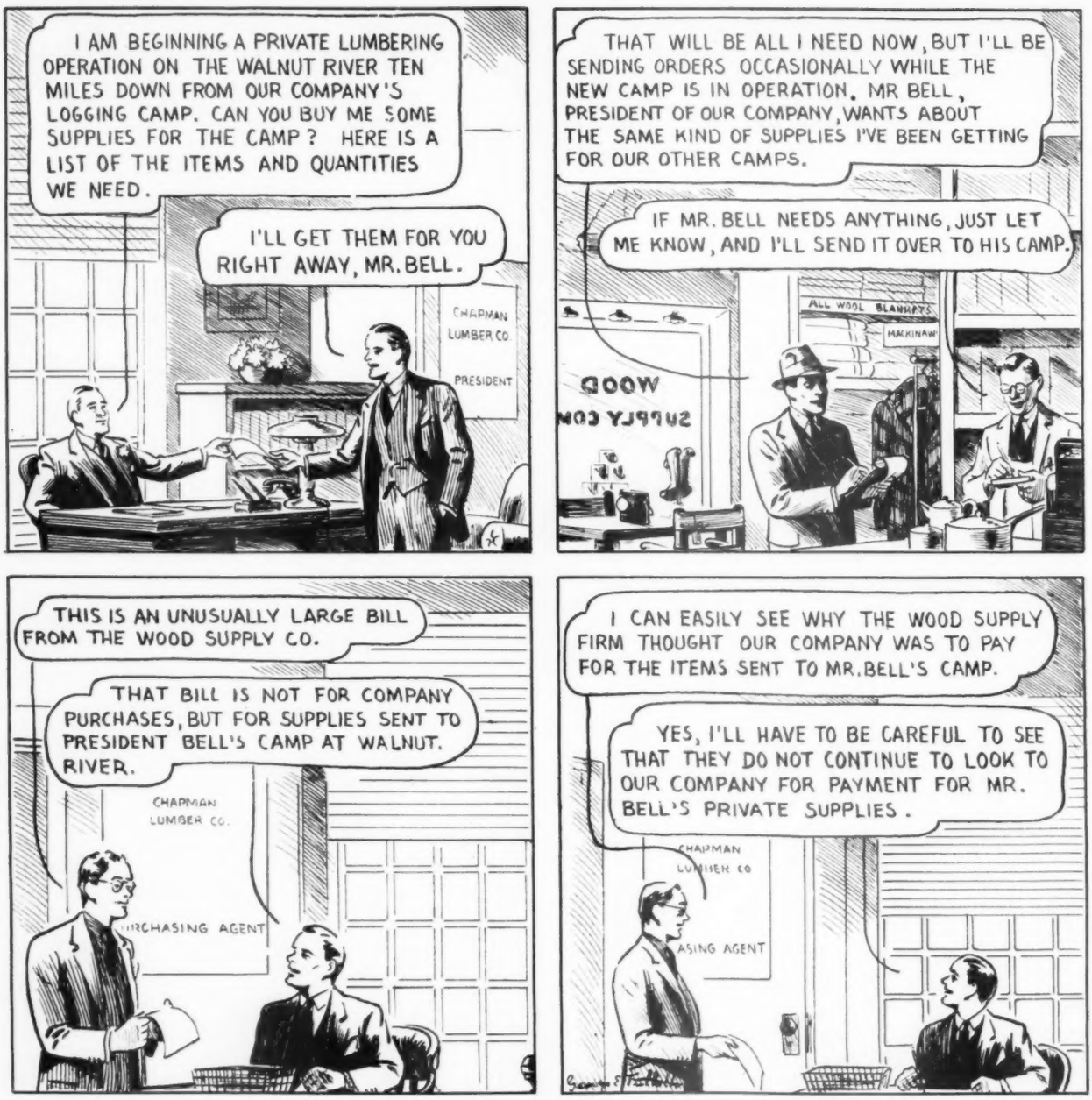
Their requisitions for charge-outs from the Commissary are made in large, minutely itemized, columnar forms. For Commissary Armfield's requisitions to Purchasing Agent Stewart the accompanying Pullman Form 94.132 and Form 94.139 are used. The former is for such items as crockery, glassware, silverware, and canned goods; the latter for such as beverages and tobacco. In each case there is provision for shipment direct to a storeroom of a District Commissary or a Commissary Agent.

The forms and procedure as to invoices and disbursements are virtually the same as those used for material and supplies for the car-repair shops, the district store-rooms and the laundries as described above.

Asked for general pointers on purchasing out of his experience Mr. Armfield summed them up this way: "Know your lines, know your markets, know your territory. Try never to over-purchase, especially in foods. Take canned goods, for example; it's much easier to replenish than to try to give satisfaction with any held over from one annual packing season to another. All canned goods are packed in one season. The first thing is to find the source of quality merchandise, like Maine corn and peas, to which the Maine dews give sweetness and fine flavor. Finding the quality source takes most of the time. Then try to get a right price, but never buy a quality article cheaper than cost and a living profit. If you do, the seller later will chisel on the quality."

PEN-POINTS ON PURCHASE LAW

BY H. H. SHIVELY, BABSON INSTITUTE



The Purchasing Agent's Authority To Contract for His Company

THE purchasing agent has here made a purchase for an individual associate. In making this purchase he has not meant to represent the company. He has used his knowledge of sources, quality, prices, and vendor dependability to further the private interests of his president.

The seller, however, does not appear to know that this particular purchase is any different from others which have been made by the purchasing agent for his company. He regards the purchasing agent as an authorized buying representative of the Chapman Lumber Company. Presumably, he has dealt with him before as such a representative. Therefore, he looks to the Chapman Company to make payment.

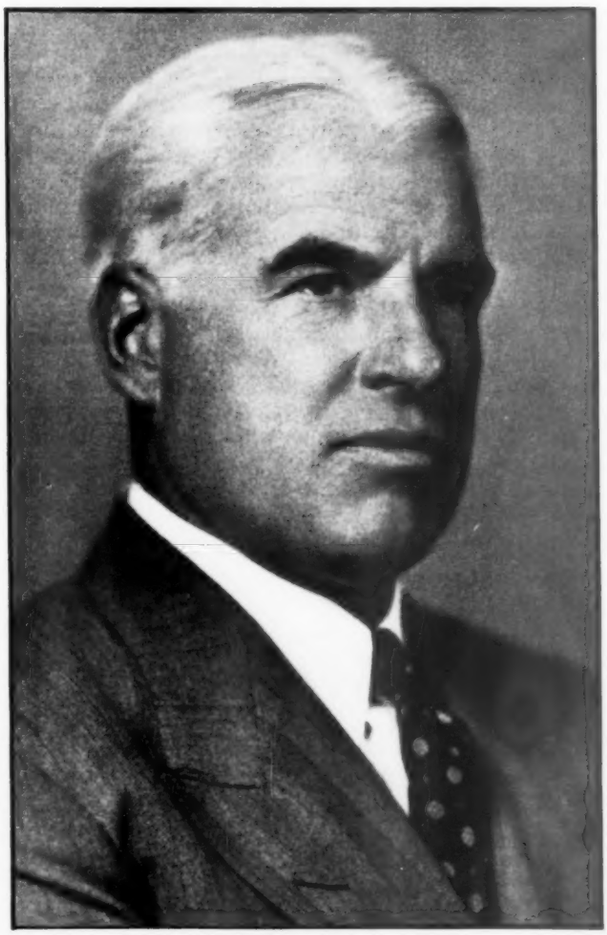
Fortunately for the company, the purchasing agent plans immediately to point out to the seller the exact nature of the transaction. By so doing, he will preclude further company liability which might arise if the bills were continuously approved and paid through regular channels. By pointing out to the Wood Supply Company that it must look to the president individually for payment for supplies sent to the Walnut River Camp, the purchasing agent relieves his company of responsibility.

SCRAP IRON FOR DEFENSE

Scrap metal, by-product and raw material of industry, must stabilize its volatile markets for effective planning and steady supply. Purchasing Agents are key men in this program.

By A. N. WECKSLER

(Photos by courtesy of National Defense Advisory Commission and U. S. Bureau of Mines)



E. R. STETTINIUS, JR.
Defense Commissioner for Industrial Materials, is working for the conservation of scrap iron supplies required in the National Defense program.

VITAL to the high standard of living of the United States—to swift transportation, machines, highways, office buildings, domestic devices and, most important of all at this time, to national defense—are iron and steel.

And underlying these basic materials is that indispensable trinity—scrap iron, iron ore and coke.

The first of the trinity is the industrial paradox. Although a product of manufacture, it is, in truth, a raw material, and forty years of progress have ad-



Finished guns of large calibre awaiting shipment at the Washington Navy Yard, one of the eleven Navy arsenals that are producing guns for the new two-ocean fleet. Manufacture of such guns consumes a large quantity of both pig iron and scrap, and at the same time produces a considerable quantity of scrap.



LEON HENDERSON

Defense Commissioner for Price Stabilization, who called Purchasing Agents to Washington to formulate an orderly policy and program in the procurement of scrap iron for industrial needs.

vanced scrap iron from a relatively unimportant junk commodity to a material of vital and strategic importance, which exerts a control over the price levels of a wide range of industrial and domestic products.

In previous national emergencies, price speculation has developed in the scrap market, and not in the iron and steel market, where the price levels have held steady. At this time, the National Defense Commission is immediately concerned with the problem of keeping scrap on an even keel, and in this way to insure against a price rise in iron and steel products.

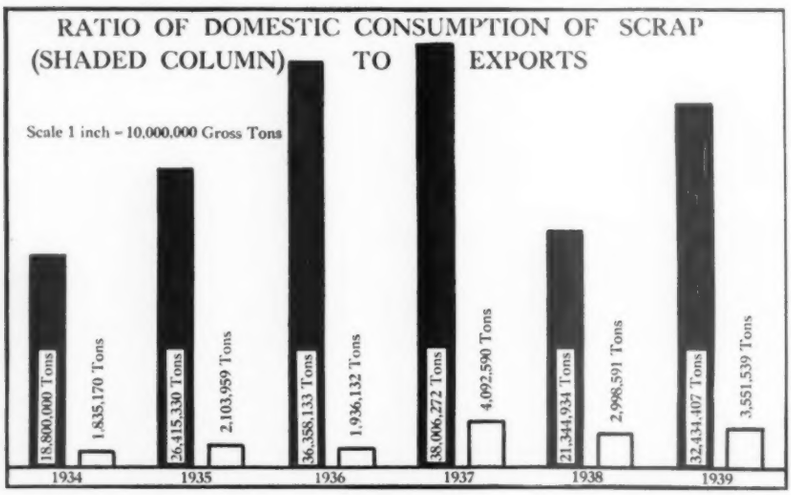
To be cast in a major role for this purpose are the Purchasing Agents throughout the country. The Purchasing Agents function in a dual role on scrap. Many purchase it as a raw material for the manufacture of new steel and casting. Even more Purchasing Agents are called upon to dispose of the scrap that is generated in the process of fabricating steel in their plants.

These normal functions, however, give rise to a contradictory situation. The Purchasing Agent who buys scrap is obviously and understandably interested in obtaining his supplies at a reasonable price, yet at the same time, the showing of the Purchasing Agent who sells scrap is dependent upon the amount of revenue he is able to derive.

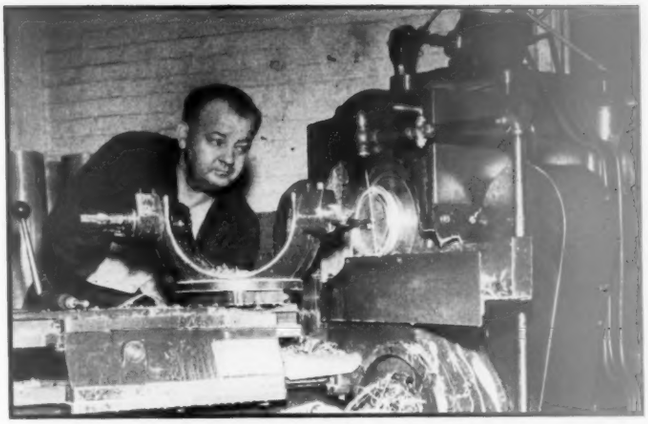
Under normal conditions, this push and pull on the price of scrap does not exert a very strong influence on the price of iron and steel. This has been the case because there has been a consistent surplus of scrap stocks for normal consumption in the steel mill and large foundry areas, and scrap on the West Coast and the Texas Gulf Coast has found a ready export market.

In the steel and foundry sections, the price of scrap has been controlled by two factors—one the available supply in relation to the industry's requirements, and, two, the price of pig iron. With steel mills formerly operating at a percentage of full capacity, having a ready supply of pig iron available, pig iron prices dictated scrap prices rather than the opposite effect.

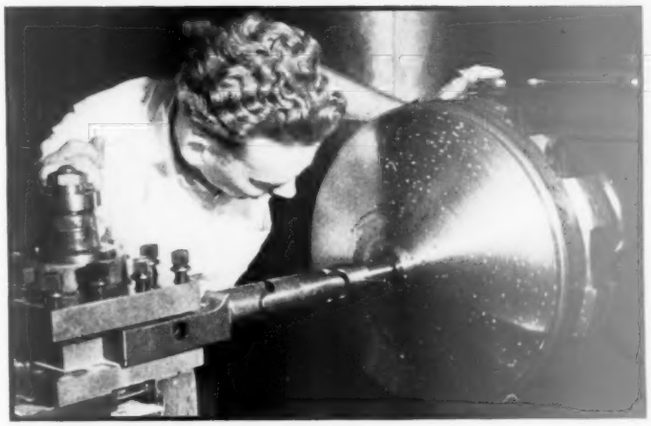
During 1939 the United States exported 3,551,539 tons of scrap iron and steel, a large percentage going from West Coast Gulf Coast ports to Japan. With scrap shipments halted, and defense calling for more scrap, the National Defense Commission is seeking a formula through which the coastal scrap can be shipped inland without increasing steel prices.



National defense industries are both users and producers of scrap metals and scrap iron and steel. One of the last processes in making anti-aircraft cartridges is machining the head of the case. The shavings will eventually find their way through various recovery processes into solid metal again.



A heavy lathe turns out a torpedo bulkhead at the U. S. Navy's Torpedo Station in Alexandria, Va., and at the same time produces the by-product of industry —scrap.



Price Factors

Price of scrap was set by the prices paid by the steel mills when it was delivered at the mills, and in other areas, the local scrap price was dictated by the mill price less shipping costs. Gulf Coast and West Coast scrap was purchased by foreign buyers at approximately the same price as was being paid for it inland by the mills, and therefore there was no discrimination on the coastal scrap prices.

While these conditions prevailed, the principal fluctuations in the price of scrap were caused by sporadic purchases made by the industry, rather than by any shortage of supply.

However, under the national defense program, it became immediately apparent that consumption of scrap iron for both American defense industry and for British defense purchases was placing a heavy drain on the scrap stocks.

Consequently, the National Defense Commission launched a study of the scrap industry to bring about an increased flow of scrap to fill the needs of defense. This study revealed that, contrary to a rather widespread misconception, scrap is not a product in itself. It is collected and prepared to conform to seventy-five separate Government specifications by a well-organized scrap industry. It is then marketed at steel mills and foundries, where it is charged into blast furnace, steel furnace, or cupola, and is converted into pig iron, steel, or a casting.

Practically all scrap iron, with the exception of steel rails and railroad car axles, is remelted and fused with other raw materials, to be reincarnated into the industrial picture as new iron and steel.

In last month's issue of PURCHASING we reported the conference of Purchasing Agents and Defense Commission officials to conserve scrap iron supplies and stabilize the market. Here is the background of that problem and an outline of the objectives to be sought.

It is axiomatic in scrap that it is where you find it. It is produced by industry as a by-product, and also by the processes of living, such as automobile wrecks and breakages.

Because scrap emanates from so many sources of supply, collection is made through different channels. At the bottom are many thousands of peddlers, who comb the countryside and ferret through the alleys of cities to collect the waste and by-products of living. These peddlers take their collections to small yards, where the collections are sorted and prepared. The small yards sell either to a larger yard in a collection center, or, if they are located near a consumer, they sell direct to the consumer.

Effect of the Scrap Embargo

Until recently, there was a surplus of scrap, and large quantities were shipped abroad. Restrictions against shipments to Japan created a problem for a segment of this country's scrap dealers.

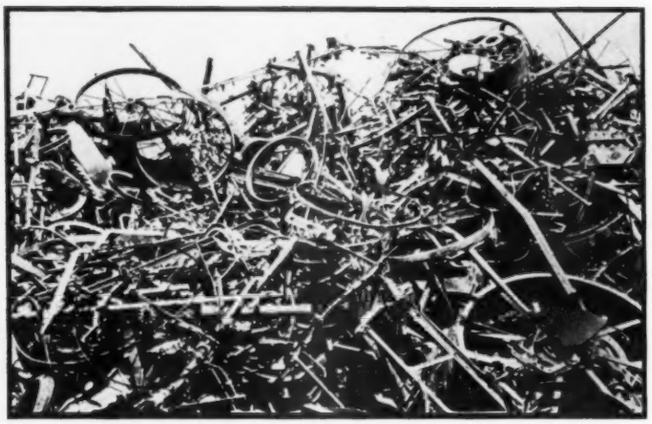
However, with the embargo against scrap shipments to Japan, the United States had a two-fold purpose: (1) withdrawing aid to the Nipponese armament industry, and (2) the conservation of American stocks. Obviously, the embargo affected two scrap producing areas, the West Coast and the Gulf Coast, which formerly shipped to Japan.

Instead of the parity in prices between inland scrap and coast scrap which had been maintained through the Japanese purchases, the scrap producers in the two coast areas were faced with the long freight haul for their product to the inland steel mills and foundries.

Ordinarily, this differential would affect the industry



A mammoth drop forge shapes part of a large gun in the Washington Navy Yard Arsenal. Production is dependent on a steady supply of scrap iron and steel at a reasonable price.



An important source of scrap metals is the familiar junk pile or "country scrap", a mixture of discarded farm equipment, automobile parts, and miscellaneous materials. It must be collected, sorted into various classifications, and prepared by cutting into proper lengths before it is suitable for industrial use.

in this manner: The embargo against shipments to Japan would give the West Coast and Gulf areas two alternatives, either to take the prices offered at the mills and absorb the differential between the mill price and the freight haul, or to refuse to sell their scrap until the demand for scrap reached such volume as to give them prices which would take care of the freight haul.

Under normal conditions of business practice in the scrap industry, the scrap dealers would follow the latter course, and the immediate result, under the heavy demands for the defense industry, would be to raise the price of scrap throughout the country to attract shipments of West Coast and Gulf Coast scrap.

Steel mills, paying a higher price for scrap, would, in turn, have to raise the price of steel, and while the coastal scrap represents a small percentage of the scrap produced in this country, the increase in price of this percentage would cause a corresponding increase in the entire volume of scrap throughout the country, leading to an increase in the price of iron and steel products.

This segment of a by-product industry would then be in a position of swinging the price level of an entire group of American heavy and light industries into a sharp upward price trend.

Cooperation for Stability

From this precarious situation have arisen numerous conferences between National Defense Commission officials, leading pig iron producers, leading scrap dealers, purchasers of scrap, and the sellers of scrap.

In the two latter brackets, the men who sat around the conference table were largely Purchasing Agents, and the formula approved by Defense Commissioners Leon Henderson, whose assignment chiefly is price control, and E. R. Stettinius, jr., directing the flow of industrial raw materials, is primarily dependent upon the cooperation of purchasing agents.

The immediate purpose of the National Defense Commission is to keep the price of iron and steel, as well as that of iron and steel products, on an even keel. The only factor which could upset this level would be spurts in the prices of scrap, and the West Coast and Gulf Coast areas hold the key to the scrap market price picture.

Defense planners were told by pig iron producers that no increase in price is contemplated, and at the same time, the steel mills and foundry representatives stated that there was no inclination on their part to support a rising price spiral in their industry.

During these same sessions, the dealers in scrap also claimed that they were not interested in boosting the prices of either scrap or any other commodity. The scrap representatives maintained that they were not wholly concerned either with depressing the price to the producer of scrap or raising the price to the consumer. The dealers claimed that their principal objective was that the price level be sufficiently high to attract enough volume to supply the steel mills and foundries.



Recovery of metals into a so-called virgin state calls for different types of smelting equipment. A special wire and cable incinerator recovers both lead covering and copper from wire and cable.



The preparation and handling of scrap is a large industry in itself, requiring capital and modern equipment. Iron borings, ordinarily hard to handle, are effectively carried by large electromagnets.

The large scrap dealer and broker contracts to supply the mills with their scrap requirements, or sells his product on the open market. His market is assured when industrial activity is at an upward swing. On the other hand, his source of supply is not as certain as is his market. Usually the broker and larger dealer, who in many cases also functions as a broker for the smaller dealers, is faced with the problem of stimulating the flow to market.

Speculative Trading is Discouraged

Smaller dealers have a tendency to hold their scrap for higher prices when there is any indication that there may be a shortage, and this practice leads to wide price swings. At times when buyers enter the market for scrap, the price shoots up, and then takes a sharp drop.

The cure for this situation, the defense planners agreed, was for the steel mills and other buyers of scrap to maintain an orderly market through a policy of steady purchasing. The scrap trade argues that it is inconsistent for the consumer to invest millions of dollars in reserves of iron ore, coal and other raw materials, for as much as fifty years ahead, but not to be more than fifty days ahead on scrap.

An orderly program of purchasing would eliminate the element of gambling on price rise on the part of any scrap dealer.

Collaboration in such a price stabilization procedure was agreed to by the scrap dealers, who maintained that they were interested only in being paid a legitimate handling and processing cost and a moderate profit for their function in the market as collectors and preparers of scrap.

The Purchasing Agents who attended the conference were equally willing to support the arrangement on the ground that an upward trend in iron and steel products prices would cost them dearly. The problem confronting the National Defense Commission planners, who are interested in maintaining on an even keel the price level of iron and steel, and therefore of scrap, is to stimulate the flow of scrap to market, in order to meet the increased demands of defense industry without shooting prices up.

The only way out of the dilemma is a direct appeal to producers of scrap throughout the country to conserve their production of scrap in an orderly fashion, and to sell this scrap to the dealer at the prevailing price, regardless of what that price happens to be. This action is suggested with the full realization that a producer of scrap on the West Coast or on the Gulf Coast may get a reduced price for his product.

The Non-Ferrous Market

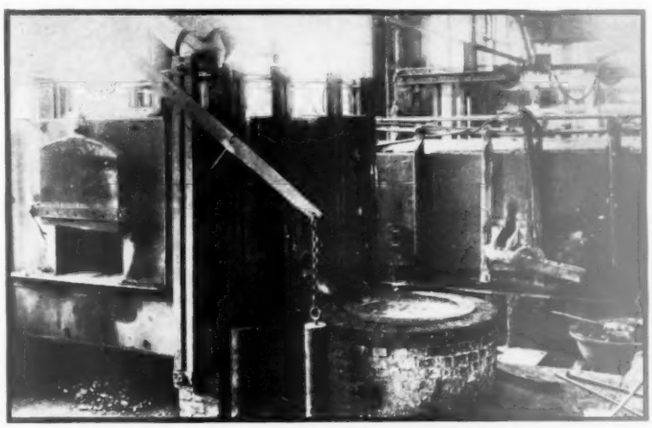
These same conditions apply to the scrap metal market, but in the case of metals such as copper, tin, aluminum, and brass, there is no possibility of the scrap product affecting the price of the metal market.

In the case of metals, the scrap prices are clearly controlled by the metal prices, and although the National Defense Commission is planning the conservation of metal scrap, the measures taken will be purely of a conservation nature.

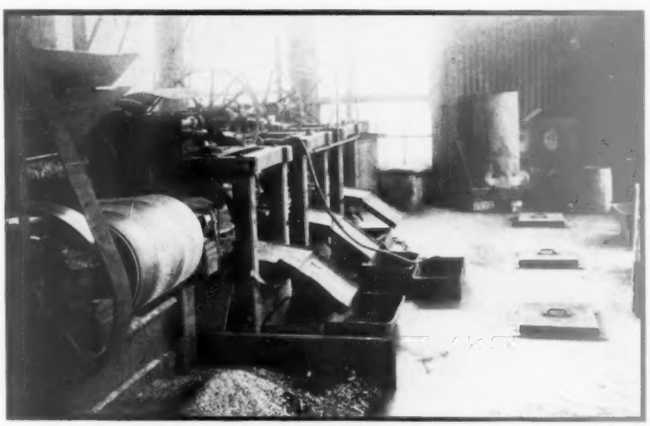
Here again, however, the defense planners believe that industry can aid the conservation program by carefully preserving metal scrap and disposing of it at the market price.

The problem then is left squarely up to the Purchasing Agents throughout the country. A producer of scrap is a user of iron and steel—an increase in scrap prices will increase the iron and steel price. And in both cases, the Purchasing Agents are directly involved.

In final analysis, it is both patriotic and good business to see that the nation's industry has the required scrap to build a strong national defense.



Recovery of junk babbitt, one of the more valuable waste metals, requires a special sweating furnace.



When brass and iron and steel borings and turnings are mixed together, a magnetic separator "clean" the metals by separating them.



Machine tool spindles which must have unvarying precision under the most exacting loads, are carried on tapered roller bearings. (The Timken Roller Bearing Co.)

WHERE ROLLER BEARINGS ARE USED

By E. L. CADY

ROLLER bearings are of four general kinds: Tapered Roller, Cylindrical Roller, Flexible Cylindrical Roller, and Spherical Roller. The choice of one type or another for a given application is more a matter of engineering than of purchasing. No industry offers better sales engineering counsel than do the roller bearing makers. Calling in those engineers is an effective and low cost way to solve problems.

On metal working machines, roller bearings are used because they can take heavy shock loads without permitting significant deflections of shafts or providing more than tiny increases in friction loads. These properties make for accuracy of machine operation and of production, with lessenings of surges and heavy demand loads on power lines.

Roller bearings can run for long periods with little or no additions of lubricants. This reduces the costs for lubricants and to lubricate, as compared to some other types of bearings. Furthermore, it lessens the likelihood of lubricants being spilled about bearing points, and thus increases general plant safety and cleanliness while reducing fire hazards.

The fact that they need very little attention permits roller bearings in well shielded housings to be operated in very dirty places or in isolated, hard-to-get-at spots. Any lubricant supplied to the roller bearings is apt to reach the edge of the housing and there to

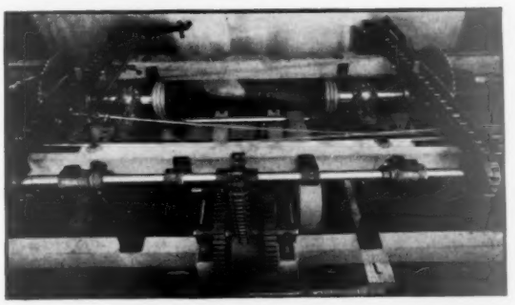






ON METAL WORKING MACHINERY

ON PROCESS EQUIPMENT



The world's largest metal drawing presses are equipped with tapered roller bearings. (The Timken Roller Bearing Co.)

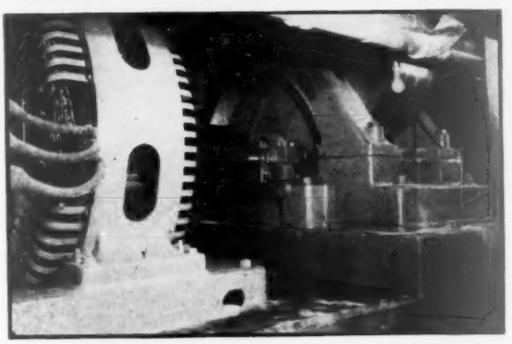
For accurate running under heavy load. (Hyatt Bearing Division, General Motors Corp.)

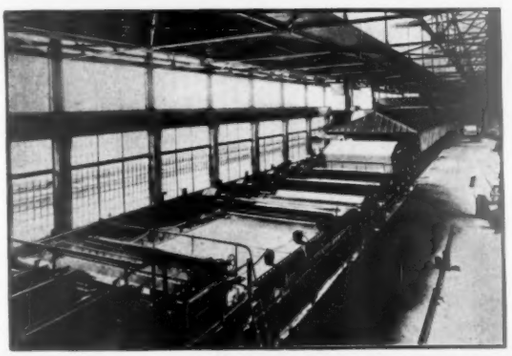
Shaft hangers, pillow blocks, etc., are carried on tapered roller bearings to save power and trouble. (The Timken Roller Bearing Co.)

combine with the foreign matter and to form a shield which helps the mechanical shields to protect the bearing. After that, dust and dirt may cascade over the bearing, become mixed with wet, and harden into a crust; the bearing is in no way damaged and cleaning need not be done until, after a long period, the bearing must be lubricated.

Roller bearings are used for the enormous stresses found in steel rolling mills, rock crushers and the like. Often the fact that the bearings take these loads with no significant deflections or friction increases, helps with the control of sizes, accuracies and finishes.

The fact that roller bearings can have ample capacities with little or no increases in the dimensions of the housings which carry them, is an aid to machine designers when machines must be compact. In many cases the roller bearing assemblies actually take up less





There is a heavy shock load when giant saws bite into lumber, followed by heavy vibration loads during the sawing. Roller bearings carry the load. (SKF Industries, Inc.)

Twenty four hours per day for over six years without interruption, roller bearings have carried the pinion shaft driven by this 700 h.p. motor which often is overloaded to 1200 h.p. (The Fafnir Bearing Co.)

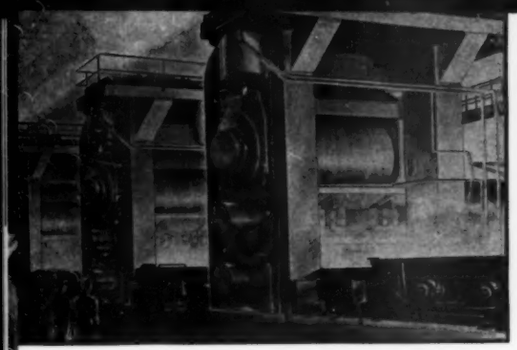
From wet end to dryer section, roller bearings speed up the operation of paper making machine. (The Timken Roller Bearing Co.)



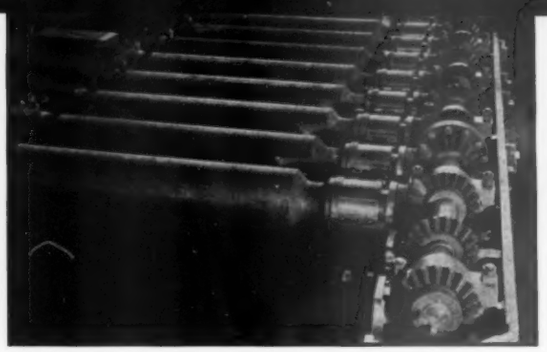
Roller bearings permitted a 27% increase of production speed on this bone fertilizer plant set-up, and in spite of the dirty conditions there never has been need for replacements. (SKF Industries, Inc.)

Wet and dirt cannot reach the well shielded roller bearings on the pillow block units on this couch roll of this board machine. (Norma-Hoffman Bearings Corp.)

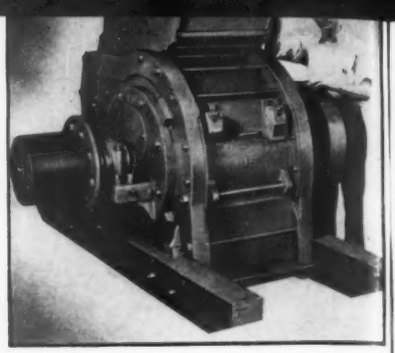




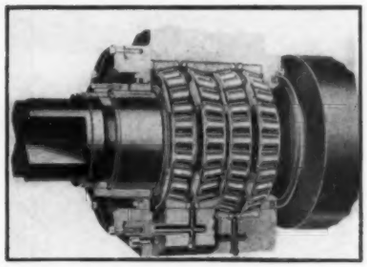
Roller bearings carry the rolls which produce high quality strip steel at the rate of 2000 feet per minute. (The Timken Roller Bearing Co.)



The steel mill roll table uses roller bearings. (Hyatt Bearings Division, General Motors Corp.)



The shock loads of crushing 50 tons of rock per hour through 2" screen bars, are carried by spherical roller bearings. SKF Industries, Inc.)



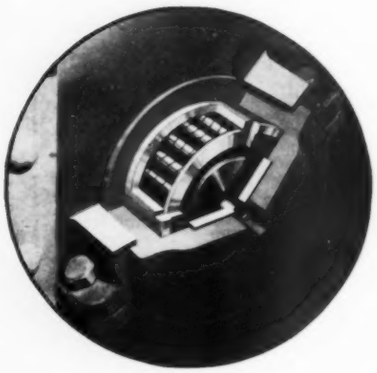
Tapered roller bearing assembly for extra heavy loads. (The Timken Roller Bearing Co.)

ON HEAVY MACHINERY

overall space than the assemblies they displace. The room saved by using roller bearings becomes available for larger gears, stiffer parts, better protecting, additional parts, ease of dismantling and assembling for service, and so on.

Some roller bearings can permit axial or endwise movements of the shafts they carry. This is useful on many kinds of motors, in the mounting of herringbone and some other gear assemblies, when the wheels

FOR

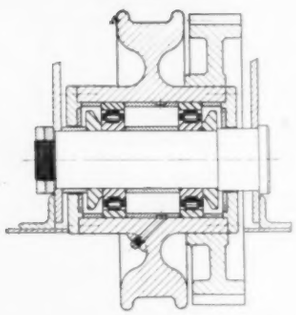


Crane bridge wheel roller bearing mounting. (Hyatt Bearings Division, General Motors Corp.)

of overhead cranes must follow tracks which do not run absolutely parallel, and in many other cases.

Axial-wise movements of shafts through roller bearings, tend to simplify the dismountings of some parts for servicing, in that the "pulling" of bearings can be avoided. Likewise, re-assembling is less troublesome and less likely to be bungled when done by ordinary mechanics.

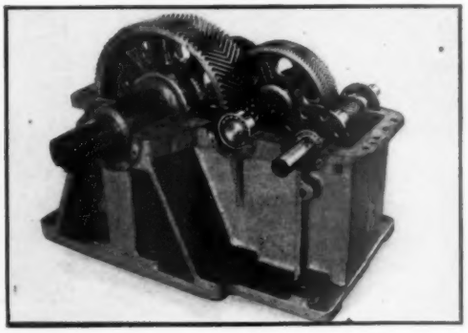
The adjustability of tapered roller bearings is a help to service crews, in that these bearings in many installations can be adjusted to compensate for wear. Sometimes such adjustments merely postpone the costs of replacements; in other cases the adjustments keep at



By mounting gear driven crane wheels on cylindrical roller bearings, the wheels may be left free to move endwise to take care of variations in the distances between rails. (Norma-Hoffman Bearings Corp.)



Tapered roller bearings carry miles of conveyor belts. (The Timken Roller Bearing Co.)



Shock dampening precision holding roller bearings on a reduction gear. (Hyatt Bearings Division, General Motors Corp.)



Roller bearings carry the gears in the coal loader. (Hyatt Bearings Division, General Motors Corp.)

top flight service a machine which can neither be spared for dismantling time nor be allowed to run with shafts in less than tight alignments.

Tapered roller bearings can be adjusted for various tightness and looseness of position and alignment. The tightness may be that of a bearing which has been so pre-loaded in its maker's factory that the initial elasticity is all taken up, or looseness may be provided to permit the mechanisms and parts supported by the bearings to "find" their own working positions and to change those positions from time to time.

Looseness provided by adjusting a tapered roller bearing is controlled, for the bearing parts are made accurately and remain accurate so the looseness between them continues to be as adjusted and not as provided by wear over very long periods of service life.

Long service lives with ease of replacement, cause high grade roller bearings to be used on "crude" equipment for materials handling. Materials handling equipment may run out doors, through tunnels, overhead, or almost anywhere that space can be found. Lubricating, servicing, and replacements of worn parts may be difficult accordingly. With their long lives, their little need for lubrication and attention, and their easy demountability, roller bearings present few service problems themselves and let other parts be replaced and serviced with minimum trouble.



To carry the sheaves of Cleveland's West Third Street Lift Bridge, Roller Bearings have 18" bores, 33" O.Ds, and 12" widths. Their pillow blocks weigh 2600 lbs. each. (SKF Industries, Inc.)

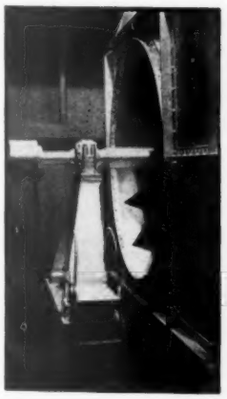
Over 300,000 mine cars have been equipped with tapered roller bearings. (The Timken Roller Bearing Co.)



MATERIALS HANDLING

The friction load on materials handling equipment may be considerable, with the starting load especially bothersome. Often the savings made in power costs justify the use of roller bearings. This is especially true when extremely cold conditions cause embrittlement of conveyor parts, and when the line of conveyor travel is mostly up hill so there is no "down hill load" of materials in transit to help supply power to the line.

Shocks are inescapable for much materials handling equipment. The shocks may come when rocks are dumped into cars and hammer blows are consequently delivered to the axles, or when sudden access of loads is applied to belts, or when mechanisms are jammed,

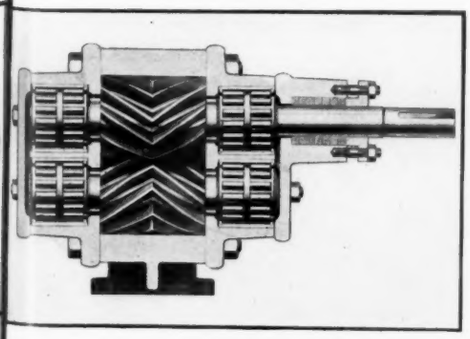


Carrying the shaft of a ten ton direct driven ventilating fan. (SKF Industries, Inc.)

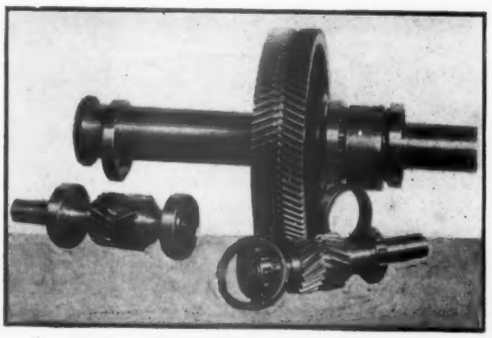


Above: Quarry car service is tough, but roller bearings can take it. (The Timken Roller Bearing Co.)

Bottom Center: Using cylindrical roller bearings to properly locate the herringbone gear teeth. Two roller bearings at one side of the large gear take the severe overhung load. (Norma-Hoffman Bearings Corp.)

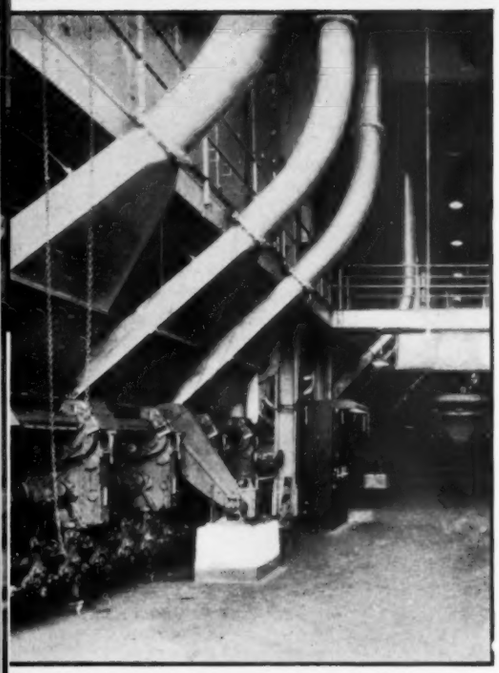


Below: Roller bearings keep a pump mechanism free from friction. (Hyatt Bearings Division, General Motors Corp.)

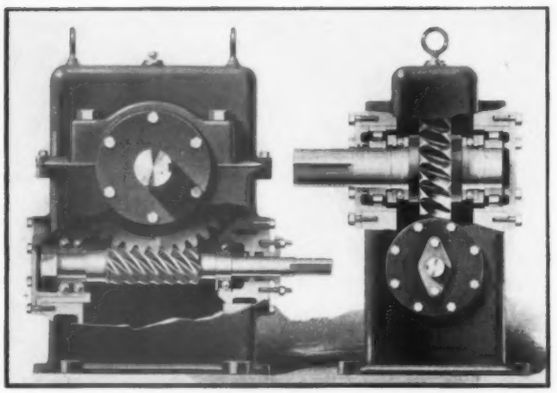


Lower Right: Crawler tractors and hyster arches, roller bearing equipped, carry logs. (The Timken Roller Bearing Co.)

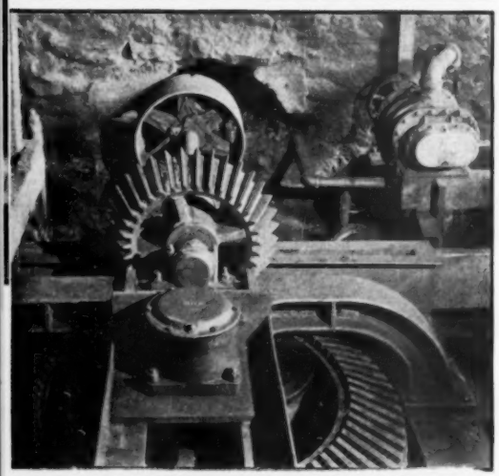




By using tapered roller bearings, mechanical fuel feeders save power at the very beginning of power production. (The Timken Roller Bearing Co.)



This worm gear reduction unit is for the heavy and shock loads to be found in the steel, lumber and paper industries. The worm gear shaft bearings which must bear the brunt of these loads is carried on roller bearings. (Norma-Hoffman Bearings Corp.

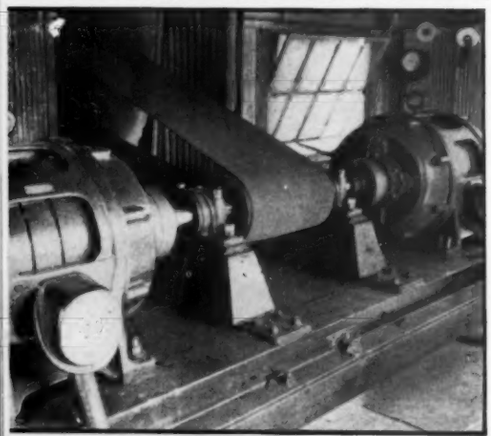


Before using roller bearings the replacement costs for bearings ran $70.00 per year on this vertical water wheel, now there will be no bearing replacement costs for many years. (SKF Industries, Inc.)

etc. The ability of roller bearings to take these shocks causes them to be used on the drive shafts of gear reducers, motors, and other mechanisms which supply power to conveyors, as well as on the conveyor parts.

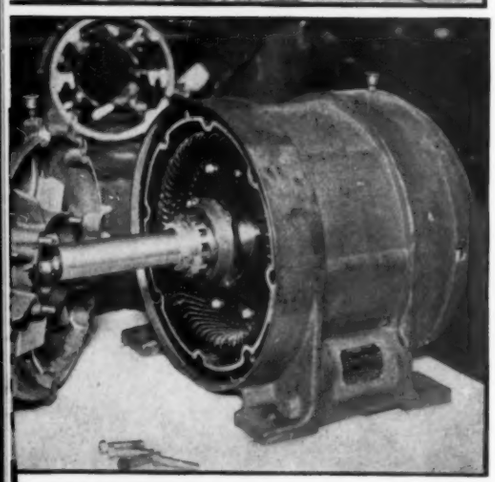
Roller bearings are widely used on power equipment, from the stokers which fire the boilers to generate the power, to motors and to shaft hanger bearings, pillow blocks and the like. This is largely because of the importance of the power equipment; roller bearings stay on the job and almost never cause shut downs. But all the roller bearing advantages of power saving, lubrication cost savings, and small relative overall dimensions apply to power equipment. Furthermore, power equipment is most likely of any in the plants to be deliberately taken out of service and dismantled for maintenance inspection, and in this the convenience of roller bearing dis-assembly and re-assembly counts heavily.

Roller bearing uses continue to be extended. The extensions of use are due to basic advantages of design, enhanced by roller bearing sales engineering.

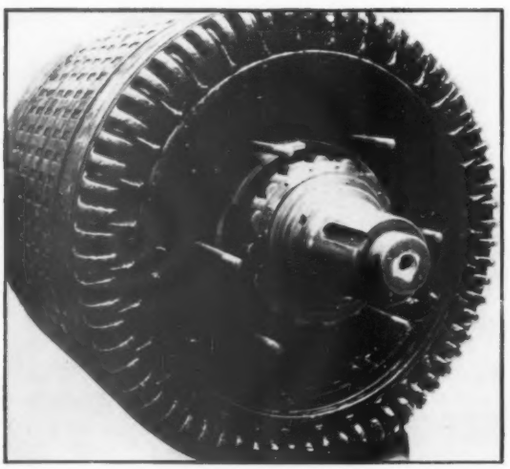


Outboard bearings support the shafts of these two 150 hp. motors. (SKF Industries, Inc.)

ON POWER EQUIPMENT



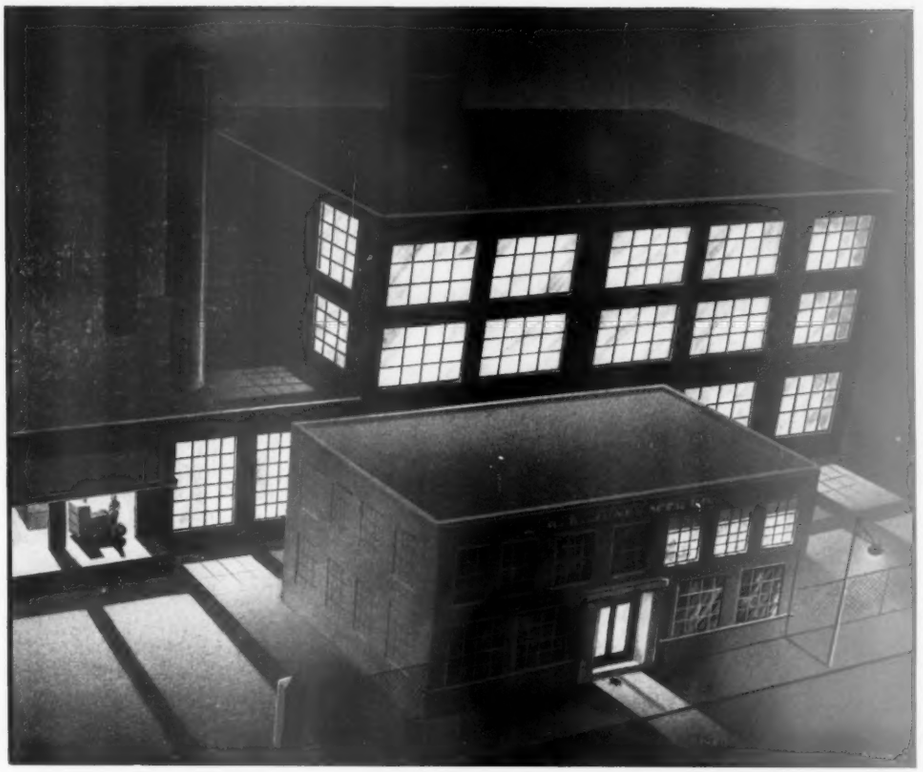
A roller bearing carries the heavy radial load at the drive end of a 10 hp. motor. (Norma-Hoffman Bearings Corp.)



The 500 hp. electric locomotive motor armature weighs about two tons and makes 1500 r.p.m. while driving the locomotive at 90 miles per hour. Roller bearings carry the load. (Norma-Hoffman Bearings Corp.)

An Interview with
H. T. LEEMING

Supervisor of Purchases
Eclipse Aviation Division
of Bendix Corporation



THE NIGHT SHIFT
CLEANS UP THE SCHEDULE

PRESENT day manufacturing brings many problems which may be reduced by adding a night shift to the Purchasing Department.

Factories are faced with the combined demands of war preparedness orders and of normal peacetime lines, as we in this group of plants must meet the government orders and then keep on turning out such normal peace lines as flexible metal hose, non-ferrous castings, and instruments for commercial aircraft.

The war preparedness customers and the peace line customers have one thing in common. They both want everything "right now," and with all the latest changes and improvements built into it. This means that speed, precision and adaptability must be in every department, especially in purchasing.

A Purchasing Department night shift, working as ours does until 1:30 a.m., is never an object in itself, but is a way of dividing up the working day to meet present-day problems. Therefore quite a few Purchasing Departments have night shifts now, and more will have them later.

The Job Must be Done

Every Purchasing Department divides its working day by functions as a matter of course. Schedules may not be rigid, and some personnel may stick to definite operations all day. Nevertheless there are hours for opening the mail, for dictating, for interviewing the day's grist of salesmen, and so on.

Most of all, the closing hours are saved for cleaning up the day. Mail is signed, confirming orders are checked up, filing is completed, and everything is made ship-shape so the whole department can start with clean desks the next morning.

As the work increases in volume, closing hours become more and more jammed. The first result of this is overtime; the after-hours working which can grow so insidiously if not watched and weeded out. To avoid overtime, little matters are left for the next morning. From time to time it becomes economical to hire more personnel and to go through the headaches of breaking-in and training. Then office equipment and machinery is bought—all to stick within the 9:00 to 5:00 habitual working schedule.

Swift changes in designs of product make the situation more complex. As these increase, the whole problem may be multiplied by a "coefficient of confusion." Girls taking papers to the files bump into other girls wanting to get those same papers out of the files. Record cards needed for placing phone or telegraph orders are in the hands of posting clerks. . . .

Orderly Handling of Routine

The answer which we have devised in the Purchasing Department at the Eclipse Aviation Division of the Bendix Corporation is to have a day shift for complex and rush operations, and a night shift for delayable and routine ones. This is simply a redividing of the working day. It simplifies everything. It has financial and

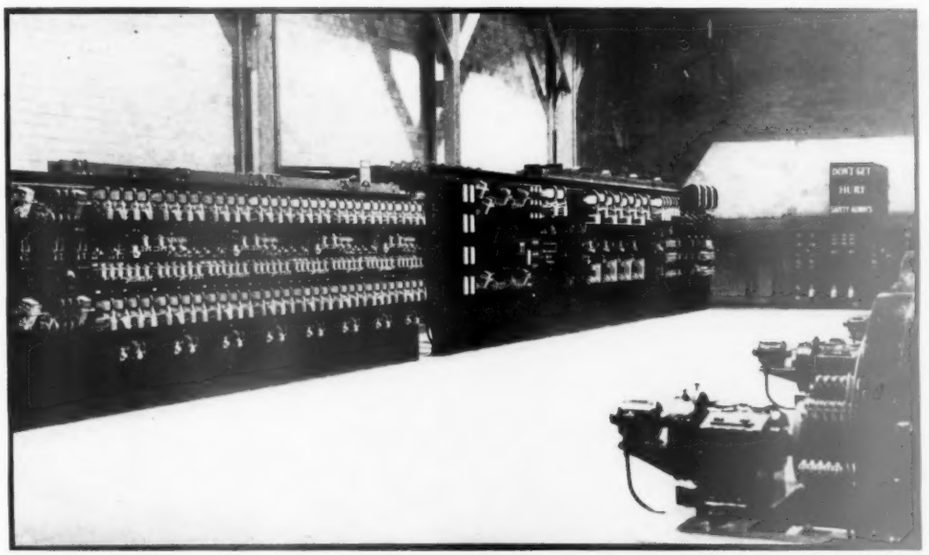
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P. A.: ***"Why didn't I think of this before? Now we're really getting somewhere."***

BUYING INDUSTRIAL CONTROL

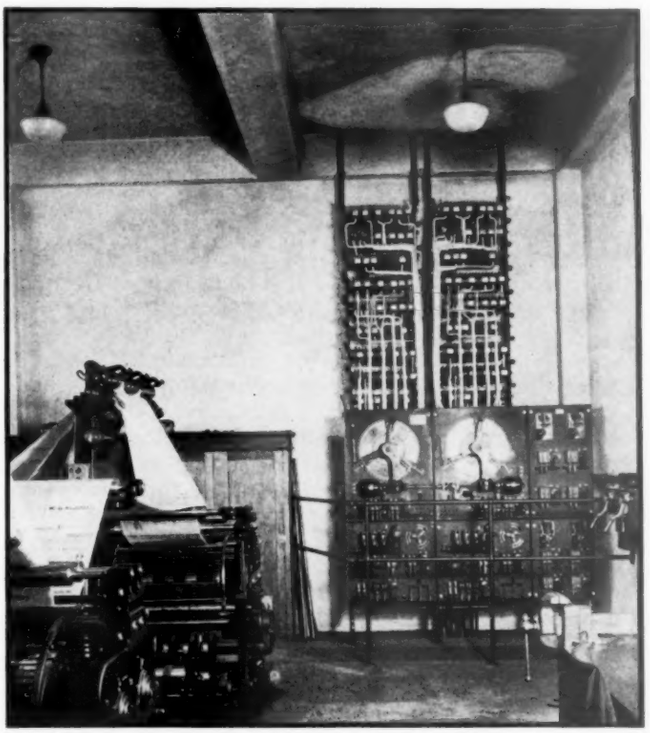
Today's demand for increased production can be met in part by controls for automatic operation and multiple processes.



Above: General view of motor and control room in an Ohio tin plate mill, showing (left to right) 220-volt a-c auxiliary control panels for oil pumps, etc., 250-volt d-c screw-down-control panels, main control board, and 2200-volt metal-clad switchgear.

By W. C. YATES

Manager, Control & Renewal Part Division
General Electric Company

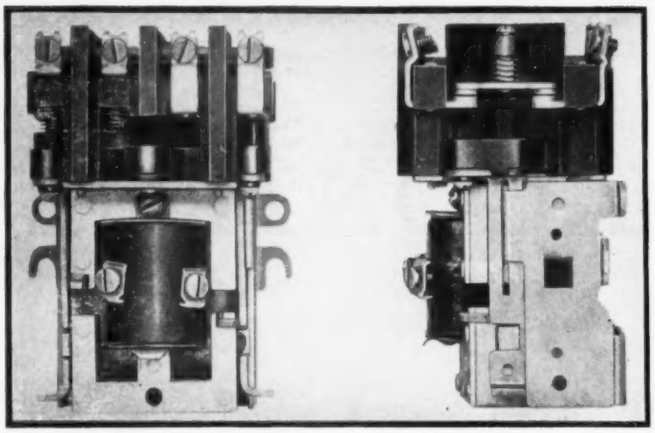


Below: Control panels and signal panel for two 50-5 hp. a-c 2-motor duplex tubular plate press in a Wisconsin printing plant.

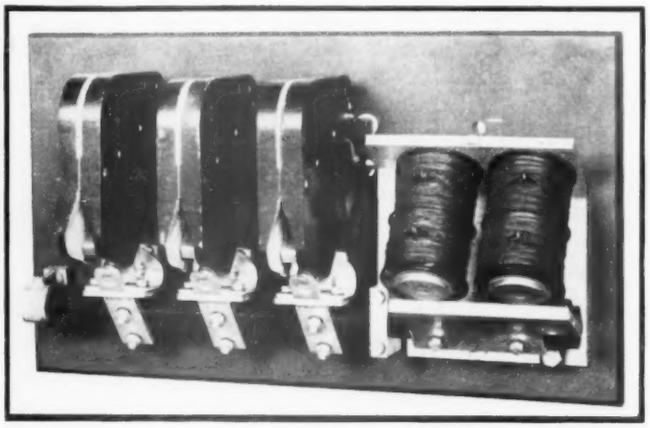
THE considerations to be borne in mind by wise buyers of industrial control apply generally to the purchase of any electrical apparatus. However, there is one that merits particular emphasis. It is that often the capability of the control device or equipment to stand up to the requirements of a job can be determined only by actual service.

The performance of motors, transformers, generators, circuit breakers, and many other types of electrical apparatus can usually be quite accurately anticipated by calculation and factory test. Such characteristics as temperature rise, efficiency, power factor, method of lubrication, mechanical and electrical stresses, and current-carrying and interrupting capacities can be determined for much apparatus before it is installed; likewise, a set of specifications can be prepared which, if met by the manufacturer, will insure that the customer gets reliable equipment. Much motor-control equipment, on the other hand, cannot be so built to specification, nor submitted to factory test before shipment as to demonstrate its ability to succesfully withstand the wear and tear of the severe service to which it is put.

Buyers of industrial control have learned to base their selection upon their own experience in the performance of what they have previously bought and upon the reputation of the manufacturer. With the purchase of no other part of the electrical equip-



Left: Small a-c magnetic contactor designed for built-in applications on machine tools and similar equipment. This illustration shows typical 4-pole construction, rated at 600-v maximum, and 10 amperes.



Right: Typical heavy-duty a-c magnetic contactor with soft steel core, the type of control now most generally used in industrial operations. It must stand up in service where the number of operations may run into the millions.

ment do the engineer of the plant, the electricians and maintenance men have more to say. Few purchasing agents will take the responsibility of balancing a lower price quoted on untried and unknown control against the proven merit of what has given good service, and is backed up by the recommendations of the operating department.

"Industrial Control" is used not only for motors but for welding, heating, lighting, battery charging, and other fields of power utilization. In all fields the control is subjected to various kinds of service from light and infrequent to what is termed "heavy intermittent." A starter for a motor that starts light and not often affords no concern over the wearing qualities of its contacts and bearings, the heating of its coils and current-carrying parts, its arc-rupturing capabilities under incessant repetitions, its behavior under short-circuit conditions, etc. Naturally, there is much industrial control that will never wear out under the service to which it is put, particularly as the minimum standards of the National Electrical Manufacturers Association and Underwriters' Laboratories put a certain assured life into anything for a given purpose that is offered for sale.

What we have in mind is the control equipment, particularly as used with motors, that is called upon to operate frequently and under severe service conditions. Industrial control provides the direct answer to increased production through automatic operation and the sequencing, or coordinating, of multiple-motor processes; to the prevention—through protection—of costly shutdowns; to the increased usefulness of motors through the modification of inherent performance characteristics so that motors are better suited to the requirements of a particular job.

There is wide variety in the motor-driven machinery, the control for which falls in this category. Among such machines are elevators, cranes, hoists, winches, steel mills, conveyors, printing presses, textile mill machinery, planers and many other machine tools. No economy in first cost can justify a breakdown in the service of such machines that will result in the spoilage

FIVE POINTS TO BEAR IN MIND WHEN SELECTING CONTROL

1—**ADEQUATE CONTROLS SAFEGUARD** the more expensive motors and production equipment, increase their usefulness, and insure against costly breakdowns and delays.

2—**PERFORMANCE CHARACTERISTICS** and service requirements vary widely. The control must be selected on a basis of suitability for the particular job to be done.

3—**STANDARD ARRANGEMENTS** save time and expense in procurement, and can be adapted to all but the most exceptional requirements.

4—**ECONOMY OF SPACE** can be carried too far in control devices. Sturdy parts and uncrowded assembly pay dividends in lower maintenance costs.

5—**NEW MATERIAL AND DEVICES** in the field of control offer many benefits to industrial users and cannot be ignored, but actual service experience is the only reliable measure of fitness.

of material, delay in production, or loss of time to the operators.

The industrial control art is changing from day to day, thanks to industry which, while taking full advantage of the established benefits offered by industrial control as it exists today, is continuously making new functional demands of control. Such demands require new devices and countless new assemblies of these and other available devices. Many schemes are untried and unproven, yet new materials, new systems and assemblies are constantly being put into service because the possibilities they offer are so attractive that industry can not wait to reap the benefits.

It is not generally appreciated how heavily the responsibility for the adequacy of the electrical equipment rests upon the control. From the standpoint of safety it protects the motor from overheating and other abuse; the driven machine from shock and undue strain; the fabric in the machine from tearing and breakage (as in textile machines and printing presses); and the operator and other persons from hazards. These safeguards are provided by features incorporated in the control, such as:

Overload protection
Acceleration within set limits of current or time
Smooth and effective braking
Undervoltage protection (against unexpected restarting)
Locking against unauthorized operation
Shielding of live parts
Emergency stopping
Protection against phase failure
Prevention of machine reversal

With respect to the wear and tear to which the electrical equipment is subjected, it should be appreciated that the control accomplishes all the circuit making and breaking. This being the case and under an intermittent-duty cycle, the heating and arcing of the contacts, the heating of the resistors or other current-limiting means, the heating of coils and the wear of bearings and electrical contacts place the major burden of successful operation upon experience in the design of devices that will stand up to the job.

The earlier forms of motor starters and controllers were of the dial or face-plate type. The drum controller was evolved for street-railway service and industrial drums soon became available for the heavier service to which industrial motors were applied—particularly for cranes and hoists. While drums are still utilized, most heavy-duty control is of the contactor type and no contactor is considered adequate that cannot stand up to a number of operations that may run into the millions. Again let us emphasize that its ability to do so can in the final analysis be determined only by service experience.

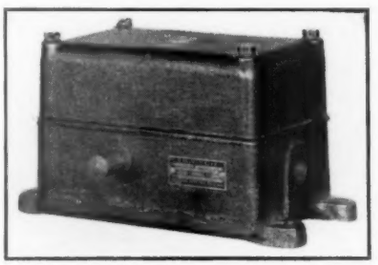
While contactors and their associated relays, master switches, limit switches ,and other pilot devices have steadily improved over the years in sturdiness and dependability, a certain amount of replacement of contacting and wearing parts must be expected. Furthermore, misapplications will occasionally occur. It is, therefore, important that the manufacturer or supplier of the control be in good position to service it wherever it may be located. If a purchaser maintains his own repair forces and a stock of parts he may have nothing to worry about, but service readily available from the manufacturer is at least reassuring.

Much progress has been made during the past decade in the improvement of the performance of contactors and other control devices without corresponding cost increase. Actually, the new designs are often lower in weight and smaller in dimensions and, at the same time, much hardier and longer lived. In some cases, the trend to smaller dimensions, merely to save space with no other economy, has been carried too far, largely because of a demand by machinery manufacturers for devices taking a minimum of space on their machines. A point is reached in the size reduction of a device, such as a magnetic contactor, where the saving of material is of little consequence, the number of parts and assembly work are no less, and the cost of adjustment and test may actually increase.

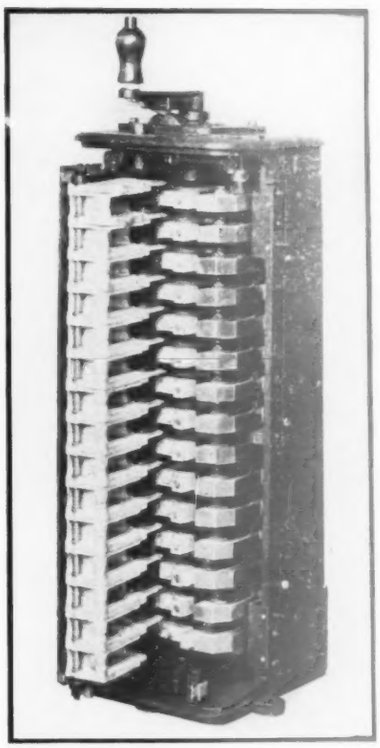
In general, sturdier parts mean less trouble and longer life. While some of the small devices stand up to the job surprisingly well, it would be preferable in many cases if the designers of machines could allow more space for the control to permit of robust devices and less crowding. There would be less maintenance and what might be needed could be done more readily.

When tempted to depart from the standards of industry, a buyer of industrial control should carefully consider the justification. There is, of course, general observance of the standards of the A.I.E.E. and of the Underwriters' Laboratories, but the standards of the National Electrical Manufacturers Association are not so familiar to purchasers as they might well be to the advantage of all concerned. The NEMA control standards are very comprehensive in such matters as ratings, performance, application, manufacturing, and

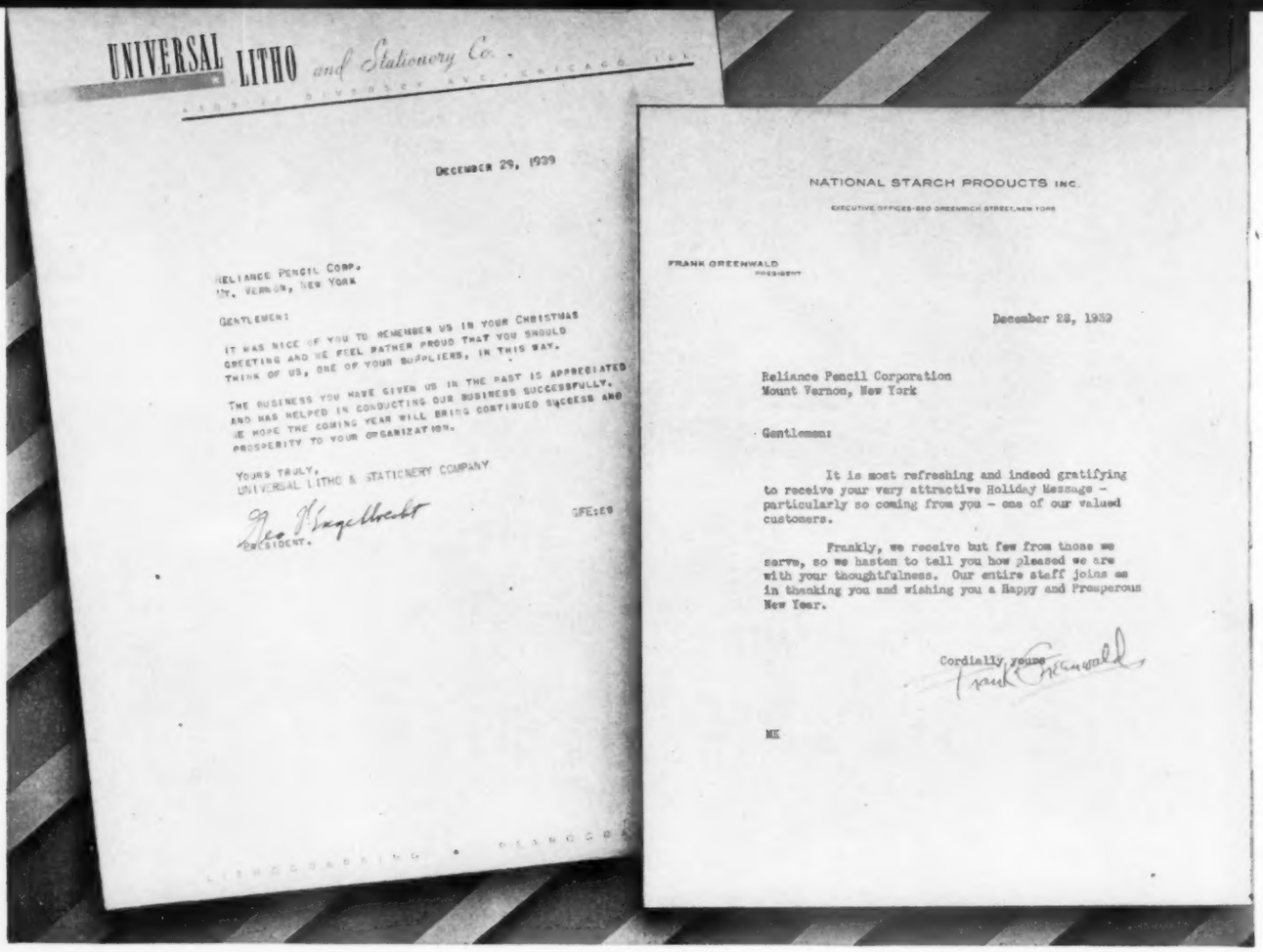
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A typical limit switch for mill service, compact and totally enclosed. The operating lever has been removed from the shaft in this illustration.



The drum-type controller was originally developed for street railway service, and was subsequently adapted to heavy-duty industrial service. Here is a dynamic-braking cam-operated drum switch for crane hoist work.



UNIVERSAL LITHO and Stationery Co.

DECEMBER 29, 1939

RELIANCE PENCIL CORP.
MT. VERNON, NEW YORK

GENTLEMEN:

IT WAS NICE OF YOU TO REMEMBER US IN YOUR CHRISTMAS GREETING AND WE FEEL RATHER PROUD THAT YOU SHOULD THINK OF US, ONE OF YOUR SUPPLIERS, IN THIS WAY.

THE BUSINESS YOU HAVE GIVEN US IN THE PAST IS APPRECIATED AND HAS HELPED IN CONDUCTING OUR BUSINESS SUCCESSFULLY. WE HOPE THE COMING YEAR WILL BRING CONTINUED SUCCESS AND PROSPERITY TO YOUR ORGANIZATION.

YOURS TRULY,
UNIVERSAL LITHO & STATIONERY COMPANY

Geo. J. Vogelbrecht
PRESIDENT.

OFFICES

NATIONAL STARCH PRODUCTS INC.

EXECUTIVE OFFICES-550 GREENWICH STREET, NEW YORK

FRANK GREENWALD
PRESIDENT

December 28, 1939

Reliance Pencil Corporation
Mount Vernon, New York

Gentlemen:

It is most refreshing and indeed gratifying to receive your very attractive Holiday Message - particularly so coming from you - one of our valued customers.

Frankly, we receive but few from those we serve, so we hasten to tell you how pleased we are with your thoughtfulness. Our entire staff joins us in thanking you and wishing you a Happy and Prosperous New Year.

Cordially yours
Frank Greenwald

MK

HANDLE WITH CARE!

A supply salesman is as valuable to the buyer as a new prospect is to the sales department

By TED KAUFMANN
Reliance Pencil Corp.

PERHAPS it all harks back to the old adage "Bread cast upon the waters . . . " and I have found that it really works!

When I started writing advertising in a department store ten years ago, I was somewhat surprised at the informality and friendliness of the attitude of my associates in their dealings with newspaper space salesmen. Their ready reception of and availability to these members of the press seemed to give our ads and publicity releases a magic "O.K." at the newspapers. That formed the basis of a policy, which during this ten year period has meant a great deal to my employers as a group, and to me as an individual.

During the transition period in which my activity broadened into the purchasing of printing and graphic art supplies, I found the need for an attitude of open-mindedness more and more necessary. Behind a desk, one does not have the opportunity to see and hear about all the new ideas, machines and processes that are constantly perfected and introduced, and without the steady contact from the sales representatives of supply sources, the purchaser tends to be blocked off from progress.

P. A.'s, I'm not advocating a welcome mat for every crackpot who thinks he's got something you need . . . NO!

But, I suggest a little less of that "Well, sell me if you can" defiance that we sometimes feel when a salesman puts his hat on our desk. Nor do I say that you should know every salesman's first name, and so greet him. But, know his product and set him straight! If he has something you need or might use, give him the help he requires to put his idea across to you. If he's not a ready talker, draw the facts out of him (it may pay you); if his product or service isn't just right, tell him what is necessary to make it applicable to your use. Don't try to do everything yourself—the more people you have working for you *the more you'll accomplish.*

We have availed ourselves of the experience and ability of manufacturers to help us increase efficiency and lower costs in many ways. Better office and factory lighting and lower wattage by using fluorescent units suggested by an electrical service; faster packing

Continued on page 68

AT TOP:
Typical of the response to the simple but genuinely friendly gesture of sending a Christmas greeting to suppliers, these letters are evidence of the purchasing department's great opportunity in building good public relations.

THE MARKET PLACE



First - of - the - month quotations for carloads or mill shipments, with comparative prices quoted one month ago and one year ago

	Dec. 1 1939	Nov. 1 1940	Dec. 1 1940
ACIDS			
Acetic, 28%, cwt.	2.13	2.23	2.23
Muriatic, 18 deg., cwt.	1.50	1.50	1.50
Nitric, 36 deg., cwt.	5.00	5.00	5.00
Oxalic, Works, cwt.	10.75	10.75	10.75
Phenol, Works, cwt.	14.25	14.25	14.25
Sulphuric, 66 deg., ton	16.50	16.50	16.50



BUILDING MATERIALS			
Brick, N. Y. dock, per M.	12.50	12.00	12.00
Cement, f.o.b. plant, bbl.	2.15	2.15	2.15
Glass, single B, per box	2.70	2.70	2.70
Lime, per bbl.	2.80	2.85	2.85
Nails, wire, per keg	2.55	2.55	2.55
Oak flooring, per M. ft.	72.00	83.00	83.00
Southern pine, K.C., per M. ft.	25.07	35.31	33.49 ↓
CHEMICALS			
Alcohol, denatured, gal.	.31½	.31½	.31½
Alum, potash, cwt.	3.40	3.75	3.75
Alumina Sulf., Comm., Works, cwt.	1.15	1.15	1.15
Ammonia, aqua, 26 deg., drums	.02¼	.02¼	.02¼
Arsenic			
White cwt.	3.00	3.00	3.50 ↑
Red, cwt.	18.00	18.00	nom.
Barium			
Chloride, ton	77.00	77.00	77.00
Carbonate, ton	56.50	56.50	56.50
Benzol, pure, gal.	.16	.14	.14
Borax, powd., ton	48.00	48.00	48.00
Chlorine, cwt.	1.75	1.75	1.75
Formaldehyde, lb.	.05¼	.05¼	.05¼
Glycerine, drums, lb.	.12½	.12½	.12½
Lead acetate, white, broken, cwt.	11.00	11.00	11.00
Nickel sulphate			
Double	.13	.13	.13
Single	.13	.13	.13
Potash			
Caustic, solid	.06¼	.06¼	.06¼
Permanganate	.18½	.18½	.20 ↑
Sal Ammoniac			
Gran, white, cwt.	4.50	4.50	4.50
Gran. gray, cwt.	5.75	5.75	5.75
Saltpeter crystals	.07½	.086	.086
Soda			
Ash, 58%, light, bulk, cwt.	.90	.90	.90
Caustic, 76%, solid	2.30	2.50	2.30 ↓
Sal, Works, cwt.	1.10	1.10	1.10
Sodium			
Bicarbonate, cwt.	1.70	1.70	1.70
Phosphate, cwt.	2.10	2.10	2.10
Silicate, 60 deg., cwt.	1.65	1.65	1.65
Sulphur, Comm., cwt.	2.60	1.60	1.60



COAL & COKE			
Anthracite, stove, mines	5.90	6.25	6.25
Bituminous, Cleaf, mine run	2.70	2.50	2.50
Beehive Coke, Connellsville	5.00	4.75	5.00 ↑
By-product Coke, Newark	10.80	11.38	11.85 ↑
FERTILIZERS			
Muriate potash, 80-85%, per unit K20	.53½	.53½	.53½
Sulphate potash, 90-95%, bags.	36.25	36.25	36.25
Nitrate soda, bulk	27.00	27.00	27.00
Sulphate ammonia, dom. bulk	27.75	28.00	28.00
Steamed bonemeal, 3 and 50, per ton	30.00	32.50	32.50
GRAINS			
Barley, malting, bu.	.64	.71⅝	.76½ ↑
Corn, No. 3, yellow, bu.	.55¼	.62	.64¼ ↑
Oats, No. 2 white, bu.	.41	.36	.40¾ ↑
Rye, No. 2, Western, bu.	.75⅝	.59⅞	.59⅞
Wheat, No. 2, hard winter, bu.	.87½	.78½	.83¼ ↑
Flour, spring patents, 196 lbs.	5.70	5.05	5.15 ↑
HIDES			
Light native cows, lb.	.14	.14	.13½ ↓
Heavy native steers, lb.	.14	.15	.14 ↓
Calfskins, 5-7 lbs. per skin	1.80	1.60	1.75 ↑

	Dec. 1 1939	Nov. 1 1940	Dec. 1 1940
IRON & STEEL			
Pig iron, foundry No. 2	23.00	23.00	23.00
Pig iron, basic, valley	22.50	22.50	22.50
Cast iron pipe, New York	52.20	52.20	52.20
Forging billets, Pittsburgh base	40.00	40.00	40.00
Sheet bars, Pittsburgh base	34.00	34.00	34.00
Wire rods, Pittsburgh base	43.00	40.00	40.00
Cold rolled sheets, cwt., Pittsburgh base	3.20	3.05	3.05
Hot rolled annealed sheets, cwt., Pittsburgh base	2.10	2.10	2.10
Cold rolled strips, cwt., Pittsburgh base	2.95	2.80	2.80
Hot rolled strips, cwt., Pittsburgh base	2.10	2.10	2.10
Tin plate, cwt., Pittsburgh base	5.00	5.00	5.00
Bars, cwt., Pittsburgh base	2.10	2.15	2.15
Shapes, cwt., Pittsburgh base	2.10	2.10	2.10
Bright wire, cwt., Pittsburgh base	2.60	2.00	2.60 ↑
Ground shafting, cwt., Pittsburgh base	2.70	2.65	2.65
Rails, ton, Pittsburgh base	40.00	40.00	40.00
No. 1 heavy melting scrap, ton, Pittsburgh	13.50	21.00	22.00 ↑



METALS, NON-FERROUS			
Aluminum, virgin ingots	.20	.18	.17 ↓
Antimony, American, spot	.14	.14	.14
Copper			
Electrolytic	.12½	.12	.12
Casting	.12⅜	.12⅛	.11⅞ ↓
Lake	.12½	.12	.12
Chromium, 97%, spot	.85	.80	.80
Lead, E. St. Louis	.0535	.0535	.055 ↑
Nickel, ingot	.35	.34	.34
Quicksilver, flask	140.00	170.00	170.00
Silver, bars, N. Y., per oz.	.42¾	.34¾	.34¼
Tin, Straits, spot	.468	.5125	.5030 ↓
Zinc, E. St. Louis	.045	.0725	.0725

METAL PRODUCTS			
Copper, wire, bare, cwt.	15.375	15.375	15.375
Yellow brass sheets, high	17.625	19.23	19.23



NAVAL STORES			
Turpentine, gal.	.305	.43¾	.43½ ↓
Rosin, Grade B, cwt.	1.82	2.00	2.45 ↑
PAINT MATERIALS			
White lead, dry, basic, carbonate	.07	.07	.07
Carbon black	.03¾	.03075	.03075
Shellac, orange	.10½	.14	.15½ ↑
Linseed oil	.085	.083	.087 ↑

	Dec. 1 1939	Nov. 1 1940	Dec. 1 1940



PAPER			
News, roll, ton	50.00	50.00	50.00
Book, M. F., cwt.	5.85	6.40	6.40
Wrapping, northern, cwt.	4.75	5.25	5.25
Wrapping, southern, cwt.	3.50	4.25	4.25
Wrapping, manila jute, cwt.	8.20	8.25	8.25
Chip board, No. 1, ton	27.50	32.50	30.00 ↓
Wood pulp, mech., ton	22.00	34.00	34.00
Wood pulp, sulph., No. 1, cwt.	2.00	3.17½	3.17½



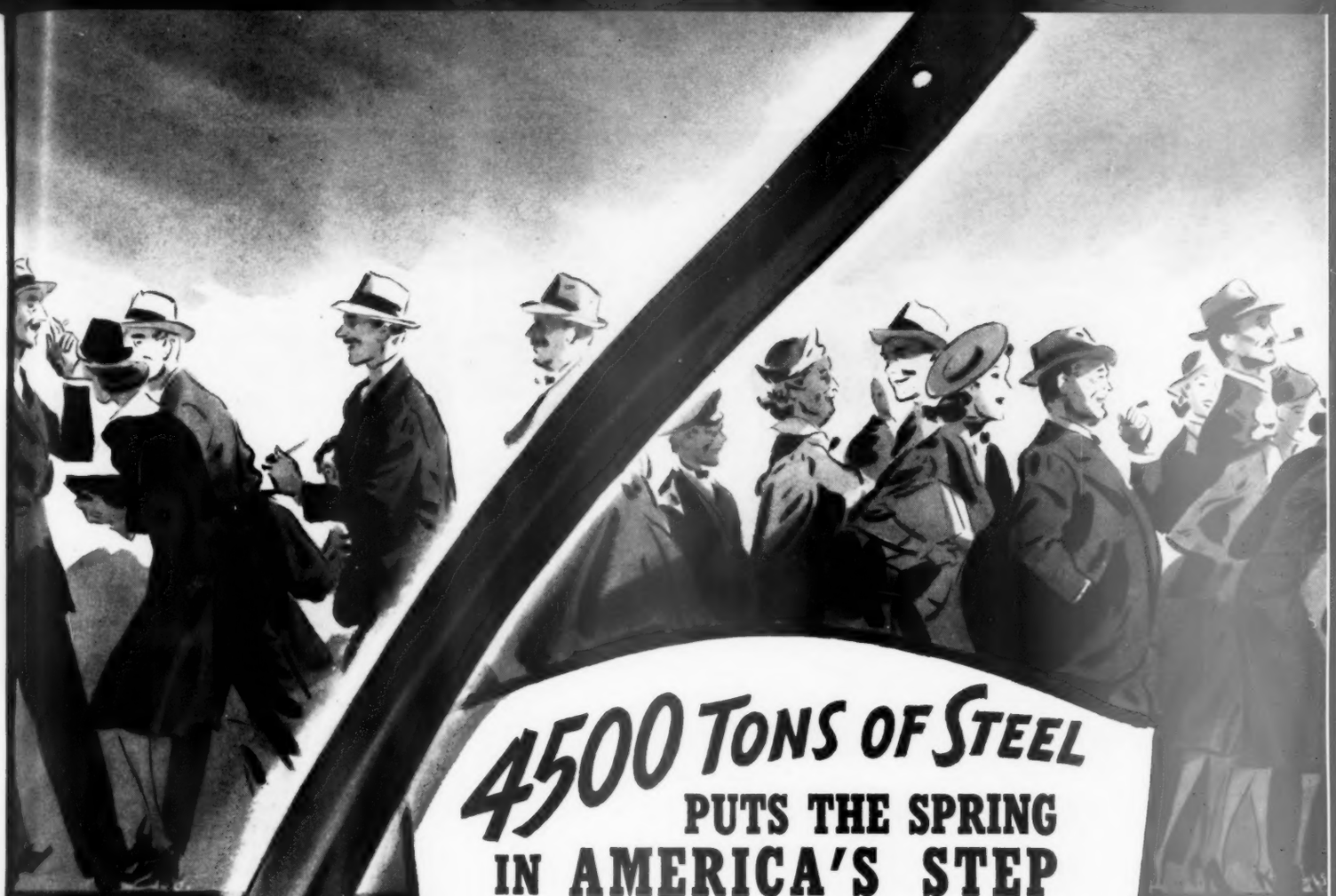
PETROLEUM			
Crude, Mid-Continent	1.02	1.02	1.02
Crude, Penna.	1.95	1.44	1.59 ↑
Gasoline, 65 oct.	.0575	.05	.05
Bunker Oil C	1.15	1.15	1.15
Kerosene, 41-43 grav.	.051	.048	.053 ↑
Penn. bright stock, light, 25 P.T.	.25	.19	.19
Penn. cylinder oil, 600 flash	.17½	.17½	.17½



RUBBER			
Smoked sheets	.20⅜	.20⅝	.21 ↑



TEXTILES			
Cotton middlings, Galveston	.0976	.0935	.0953 ↑
Cotton yarns, 22s	.27	.25½	.27½ ↑
Print cloths, 38½", 64 x 60	.05⅛	.05¼	.05⅜ ↑
Sheetings, 37", 48x48	.06¼	.06	.06¼ ↑
Wool, fine combing, ½-blood	.95	1.03	1.03
Worsted yarns, French 2-40s	1.87½	1.72½	1.80 ↑
Worsted yarns, English 2-40s	1.76	1.75	1.82½ ↑
Silk, Japan, double extra cracks	3.46	2.60	2.52 ↓
Rayon, viscose, 150, 40s	.53	.53	.53
Burlap, 10½-oz., 40"	.11	.074	.079 ↑
Hemp, Manila	.07⅞	.06½	.09 ↑



4500 TONS OF STEEL PUTS THE SPRING IN AMERICA'S STEP

Ever wonder why even your oldest shoes don't get fallen arches, but instead always maintain their springiness? It's because of a little metal shank piece put in the shoe arch as a reinforcement. Here is another example of the importance of steel in your daily life. Each year *4500 tons* of steel go to make these little metal shanks for 250,000,000 pairs of shoes.

The comfort, safety, convenience of almost every moment of our day depends on steel. We enjoy food delicacies from all over the world that could never reach us except for steel cans made of tin plate. Our food is cooked on a steel range, in sanitary enameled steel utensils. We work at steel machines, steel typewriters, or steel desks in buildings made safer by steel framework. We travel by automobile, train, ship or plane made of steel. Our clothing, newspapers, movies are made by steel equipment. And at the end of the day we bathe in a steel tub, and sleep in a bed made comfortable by steel springs.

Youngstown makes the steel for countless of these uses. Every man in our mills knows he is working for your convenience and safety, and is proud of it. *Men* are the most important factors in steel. It is because of our *men* that buyers know they can depend on Youngstown's *steel.*

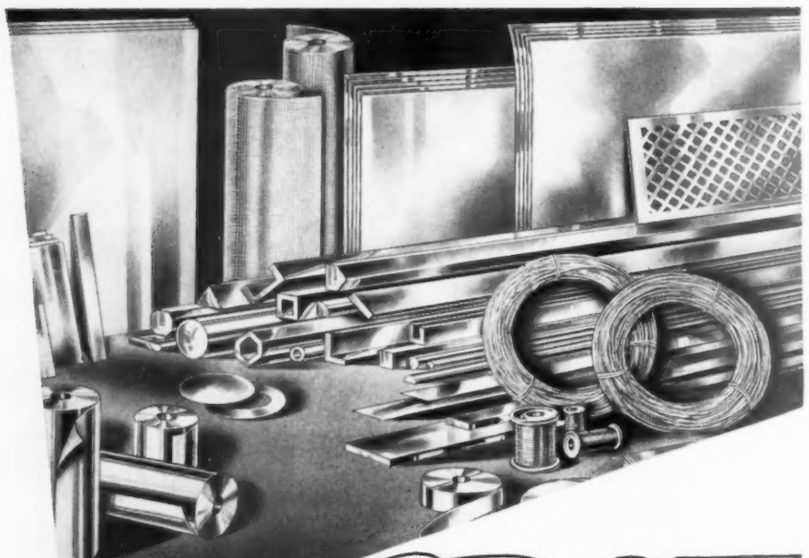
Sheets - Plates - Pipe and Tubular Products
Conduit - Tin Plate - Bars - Rods - Wire
Nails - Tie Plates and Spikes

25-21C

QUALITY TRADE MARK YOUNGSTOWN SERVICE

THE
YOUNGSTOWN
SHEET AND TUBE COMPANY

Manufacturers of Carbon and Alloy Steels
General Offices - YOUNGSTOWN, OHIO



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DELIVERIES
OF BRASS and COPPER in any Form

HUSSEY

NATION WIDE SALES AND WAREHOUSE SERVICE ORGANIZATION

provides those essential "spot" deliveries of your copper and brass requirements. Try the convenience of a single order and a single billing by specifying HUSSEY during 1941.

•

C. G. HUSSEY & COMPANY
(Division of Copper Range Company)
ROLLING MILLS AND GENERAL OFFICES: PITTSBURGH, PA.
Warehouses in Principal Cities

Copper HUSSEY Brass

When writing C. G. Hussey & Company please mention Purchasing

The Night Shift Cleans Up

(Continued from page 55)

investment advantages. And it starts the department off with clear desks at 9:00 a.m.

Sorting is one bottle neck which can be cleared up at night. When little or no sorting is done by the day shift, then papers wanted in the daytime are either in the files or on the desks of the persons who requested them from the files. Therefore all papers can be found quickly.

Filing can be done at night. The day shift takes papers and records as needed. The night shift makes sure that all papers are in their proper places and that none are hanging around on desks at 9:00 a.m.

Price records can be posted at night. During the day there are 101 reasons for wanting to get at the price cards. When cards have to come from the posting clerks to the buyers and then go right back, etc., the possibilities for delays and errors are enormous. Routine posting done at night is uninterrupted and efficient.

Confirming the orders placed by telephone or by telegraph during the day, is a night shift operation. It requires detailed checking of the kind which ought never to be interrupted.

There are plenty of other routine operations which are best performed during the calm and steady hours of the night shift. Reports are one . . . and every buyer knows how the demand for these is increasing. Tabulations, charts, statistics, the calculations needed for forecasting, the data which must be presented in inter-department conferences, all such things are best prepared when buyers are not asking for the same papers which the tabulators need.

There Are Other Advantages

The night shift is good for the working habits of the day shift. When just one person expects to handle a whole operation involving a batch of papers, he may take chances on breaking with routine and with standard office procedures. But when he knows another must complete the operation he starts, then he must stick to routine. The result is self discipline with higher accuracy.

Personnel becomes habituated to starting the day with clean desks and to depending more upon team work than upon individual brilliance. This, of course, helps everybody to get more done, and reduces the demands on the aspirin inventory.

Office machinery becomes more profitable with the night shift. Existing machines are used for more hours and may be amortized and obsoleted in fewer years. New machines can justify and return their investments more easily . . . an electric typewriter costing $600.00 to $700.00 might not be so profitable if used for the day shift only.

Night operators can "get into" the machines with work which takes so long

How CLARK Fork Trucks can serve the Purchasing Agent

Wise buyers specify that raw materials and parts be delivered in packages designed for economical handling and storage.

They use Clark Fork Trucks to handle these packages on receipt. They save money on every handling operation because Clarks are simple and economical to operate—do a hundred lifting, carrying and tiering jobs.

Let Clark engineers help you, your suppliers (and your customers!) to devise economical packages and low cost means for handling them. An inquiry implies no obligation!

CLARK TRUCTRACTOR

Div. of Clark Equipment Co.

123 Springfield Place ● Battle Creek, Mich.



EXAMPLE

With the help of a Clark Packaging Engineer, a western motor truck manufacturer and a Michigan wheel manufacturer worked out this shipping package. It is made up at the end of the wheel production line, is kept intact until the wheels are needed on the truck assembly line miles away.



Both the truck manufacturer and his wheel supplier use Clark Fork Trucks. Whenever the skid load is handled, it is handled by a Clark, at worthwhile savings. The Clark is easily maneuvered inside of freight car or motor freight truck. It tiers loads in high, safe piles, expanding storage space.

When writing Clark Tructractor please mention Purchasing

Like a Sentinel to Keep Out SABOTEURS





YOUR BEST DEFENSE IS AN

ANCHOR FENCE

Growing evidence of sabotage throughout our vital industries at home, make it absolutely essential that unauthorized persons cannot take even a single step on your plant property. An Anchor Fence is a positive way to guard your plant, equipment and personnel when you are handling special work in connection with our National Defense Program.

Like a ring of military sentries, an Anchor Fence surrounds your entire property with a wall of protection through which saboteurs, spies and trouble-makers can neither sneak nor force their way.

When an Anchor Fence says "Halt" it means just that to man or mob. That's why business executives, profiting from the lesson learned 25 years ago during similar conditions, are installing Anchor Fences around their plants today. Study your plant layout. Then call an Anchor Fence Engineer. Let him show you the many ways saboteurs, trouble-makers and spies can enter your plant, or reach your laboratories and places allotted to secret work. Let him show you how an Anchor Fence can seal up these unsuspected sources of danger.

Let him show you, too, how an Anchor Fence will make more of your plant property usable by protecting out-door storage yards, railroad sidings, open buildings and sections within your plant where special or secret work is being handled. An Anchor Fence engineer will gladly call on you and contribute his years of experience to help you solve your fencing problem—if you will only fill in and mail the coupon below—Now.

ANCHOR POST FENCE CO.
6615 Eastern Avenue, Baltimore, Maryland.

Please have Anchor Fence Engineer call as soon as possible. This does not obligate me in any way.

Name .....

Firm .....

Address .....

to do that it might not be practical if the machines were subject to the emergency interruptions of day shift work. With a night shift, more ways can be found for the machines to be profitable.

The utilization of floor space is doubled by having a night shift. This means a great deal when the production men are clamoring for every available square inch. New buildings may provide more office space, or may be filled up with machinery faster than was expected. Extra space can be hired, but this sets up problems of messengers, communication, supervision, coordination, and (perhaps) policing. When double use can be made of existing floor area, the Purchasing Department knows it has the space.

These are "right now" times. Speed always costs money, but right now the costs of delays are greater than those of speed. This is true of both war and peace lines. The night shift is a way of dividing up the day so that servant of all departments, the Purchasing Department, gets more done with more accuracy in less elapsed time.

* * *

Buying Industrial Control

(Continued from page 59)

type combinations. If some standard arrangement will answer the purpose, a special requirement is not justified as it can mean only additional expense and time to produce it.

It is possible that some controller manufacturers would not agree unreservedly with one or two of the points made in the foregoing but there is one point on which they will all unquestionably take the same stand. It is that, when purchasers are in a hurry for their electrical equipment, they should not take it for granted that the control can be built and shipped as soon as the motors. As a matter of fact, a standard stock motor may serve for many applications, each of which require a different control. In many such cases, the control must be built to order—perhaps out of stocked parts but put through the production mill just the same. When business is booming and production lags—as is inevitable—then our good and friendly purchasers become upset and blame us for something they could have helped us avoid.

How often the motor order is placed first and later it is decided who is to be favored with the control. When parts are in stock, special motors can often be promptly assembled and shipped. All the parts of the special control for that particular motor may not be in stock. In any case, the control department or manufacturer asks for an even break.

When writing Anchor Post Fence Co. please mention Purchasing

"PF"



Try this Electrode that's TESTED *and* APPROVED!

You don't have to experiment or run costly tests with an electrode like "PF". Its performance is proved by industry and *approved* by all important testing bodies. It's ready to give you the dependable results you want.

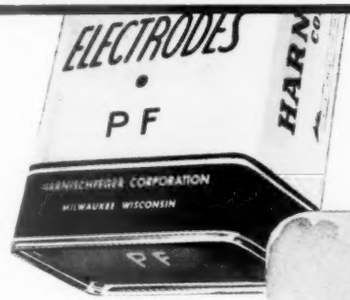


P&H WELDING ELECTRODES

Use "PF" on mild steels, where irregular joints or poor fit demands a liberal flow of weld metal . . . on girders, ship bulkheads, pipe booms, web frames, shaft tunnels, tanks, headers, sheet metal, steel plates, etc.

"PF" works well in *all positions*. Vertical welds can be run either from bottom up or top down with very good results. With high physical properties, "PF" is easy to use with either generator or transformer type welders.

Like all P&H electrodes, "PF" is packed in air-tight containers — kept "factory fresh" to assure best results whether you use them next week or next year. You can buy them in quantities at quantity prices. Ask a representative to call and demonstrate how P&H electrodes can save you time and money.





P&H-HANSEN Square Frame *WELDERS*

It's a sensation wherever welders are used! With one simple control, a single machine gives you any current from 200 down to 15 amps. And machines can be hooked up in parallel — in a jiffy — for their combined capacity. It eliminates the need for special, high amperage machines, keeps busy serving either one or two operators. And here's arc performance that isn't equalled. Ask us to send Bulletin W-28.

General Offices: 4577 West National Avenue, Milwaukee, Wisconsin

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DEFIANT!



THESE MARKS DEFY THE SLASHING SLEET AND PIERCING COLD OF WINTER

—because they're made with Paintcil!

Real paint in stick form. Applied under any condition . . . remains sharp and clear-cut under *all* conditions.

And note how easily marks are made. Imagine anyone ever wanting to go back to the cumbersome paint bucket-and-brush!

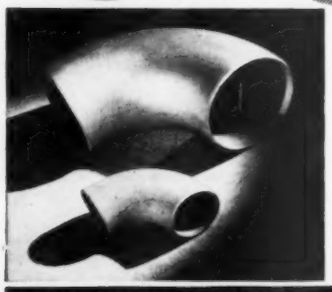
Prove it yourself—with samples we gladly supply. Specify color.

PAINTCIL

HELMER-STALEY, INC.

323 W. HURON ST. CHICAGO, ILL.

STAINLESS WELDING ELBOWS



These 11 gauge wall 90° elbows are available from stock in Stainless Type Nos. 308, 316, and 347 in 2", 2½", 3", 4", 5", and 6" I. D. sizes. Write for list prices and description of complete line.

PITTSBURGH PIPING & EQUIPMENT CO. 10 FORTY-THIRD ST., PITTSBURGH, PA.

Handle With Care!

(Continued from page 60)

and a great saving in package costs by having a box company make a complete survey of packaged brand sales; economical standardization of office forms by an ambitious printing salesman. These and many other improvements were effected only by cooperating with, instead of holding back, the salesmen who call.

This isn't news to the large, well organized purchasing department, but a one-man purchasing unit can do only what two eyes see, one brain thinks, and two hands accomplish.

As an example of our policy toward suppliers, we sent (in addition to our regular trade) Christmas Greetings to every supplier on our books. The result was gratifying—far beyond our aim. Our only object was to show that we appreciate their help and willingness as much as we did the patronage of our customers. These two letters were selected at random from the file of replies—I think they speak for themselves.

When the president of organizations big enough to literally "put us in their pocket" will stop to acknowledge a greeting, it means that we are getting attention far outranking our importance.

Today's conditions of streamlined merchandising and business policies seldom allow the smaller buyer to achieve his object merely by the size of his purchases. Therefore, we use every means to make ourselves known, not the superficial or "phony" methods, but by a sincere interest in those who serve us, and who will help our growth by their service.

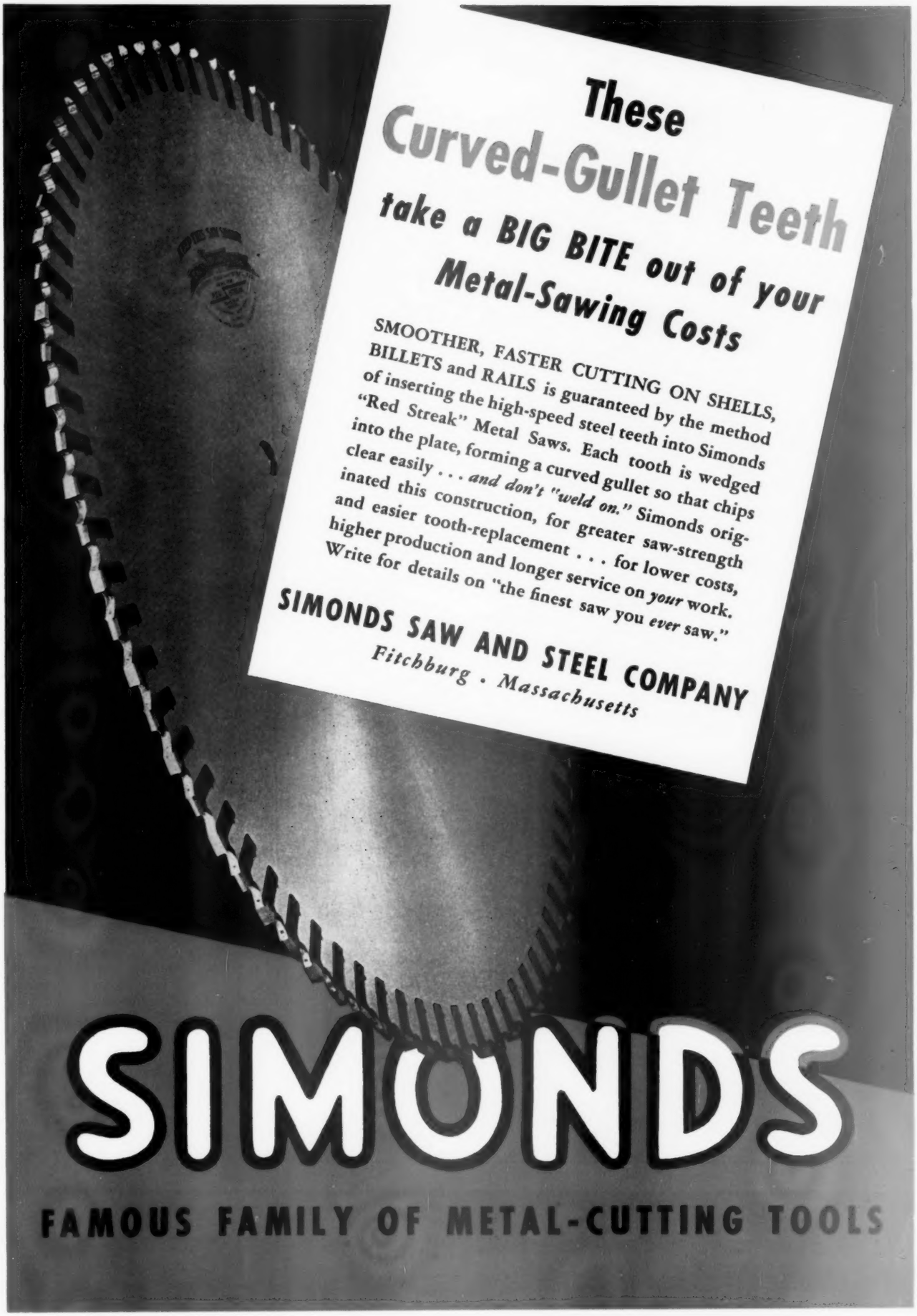
* * *

Ralph W. Maxwell of the purchasing department of the Boston Edison Co. has been promoted to the position of Assistant Purchasing Agent for the company. He succeeds Arthur McEachern, who has been transferred to the company's industrial relations department.

Howard B. Gilligan, formerly Assistant Purchasing Agent for the New York Air Brake Co., has been appointed Assistant Purchasing Officer for the Watervliet (N.Y.) Arsenal.

Edgar S. Bloom has resigned as Director of Purchases at New York for the British Ministry of Shipping, where he has been serving the British War Purchasing Commission for the past year, to become President of the Atlantic, Gulf & West Indies Steamship Lines. Mr. Bloom retired as President of the Western Electric Co. last December after forty-three years of service in the Bell Telephone System.

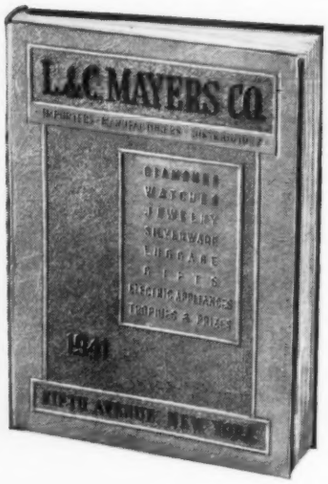
Russell McIntyre has been appointed Purchasing Agent for Sound Kiewit Co., at Camp Murray, Tacoma, Washington, where the company is erecting 1500 buildings for the cantonment.



When writing Simonds Saw and Steel Company please mention Purchasing

Christmas Gifts

FOR CUSTOMERS, OFFICIALS, EMPLOYEES



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DIAMONDS
WATCHES
JEWELRY
SILVERWARE
ELECTRIC APPLIANCES
LEATHER GOODS
RADIOS
GIFTWARES

☆

For new gifts (many original and exclusive) for men and women, in all price ranges, see our 1941 Catalog. . . . Every article is guaranteed. . . . Prompt shipment from our large stocks.

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"Yours on Request" offers you the latest catalogs and manufacturers' announcements, information on new industrial products. Are you using this department? Turn to pages 10-16.

Obituary

Howard P. Wingert, 75, for many years Purchasing Agent for the American Brakeshoe & Foundry Co., and prior to that an Assistant Purchasing Agent for the Central Railroad of New Jersey, died at his home in Elizabeth, N. J., October 27th. Mr. Wingert retired from purchasing work several years ago, and since that time operated his own business, the American Commodities Co., New York City.

Ernest B. Wright, Purchasing Agent for the Benjamin Franklin Hotel, Philadelphia, died October 28th at his home in that city.

Fred R. Peterson, 48, Purchasing Agent of the Russell & Stoll Co., New York City, died of a heart attack at his home, October 29th.

Sanford L. Hamilton, 36, formerly Purchasing Agent for the Willow Brook Dairy Corp., Mount Vernon, N. Y., died at his home in that city, November 9th.

Robert L. Gray, Purchasing Agent of the Bayer Co., New York, died at his home in Newark, N. J., October 30th, after a brief illness.

Robert T. Richard, 74, for more than thirty years Purchasing Agent of the Southern Drug Co., Jacksonville, Fla., up to the time of his retirement on account of ill health early this year, died at his home in that city, November 3rd.

Glen G. Shepler, 43, Purchasing Agent for the Strong Electric Corp., Toledo, Ohio, died at St. Vincent's Hospital in that city, November 13th, following a heart attack at his office.

Arthur Ruths, for 18 years Purchasing Agent of the Ebinger Baking Co., Brooklyn, N. Y., up to the time of his retirement last June because of ill health, died at his home in that city, November 21st.

James Butler, 78, formerly Purchasing Agent for Columbia University, New York, up to the time of his retirement on account of ill health some years ago, died November 17th at his home in Ozone Park, Queens, N. Y.

Robert Grant Ewell, 26, Assistant Purchasing Agent of the Chicago Pneumatic Tool Co. at Cleveland, Ohio, died November 16th in a grade crossing collision at Republic Ohio, while on a hunting trip.

THE PURE

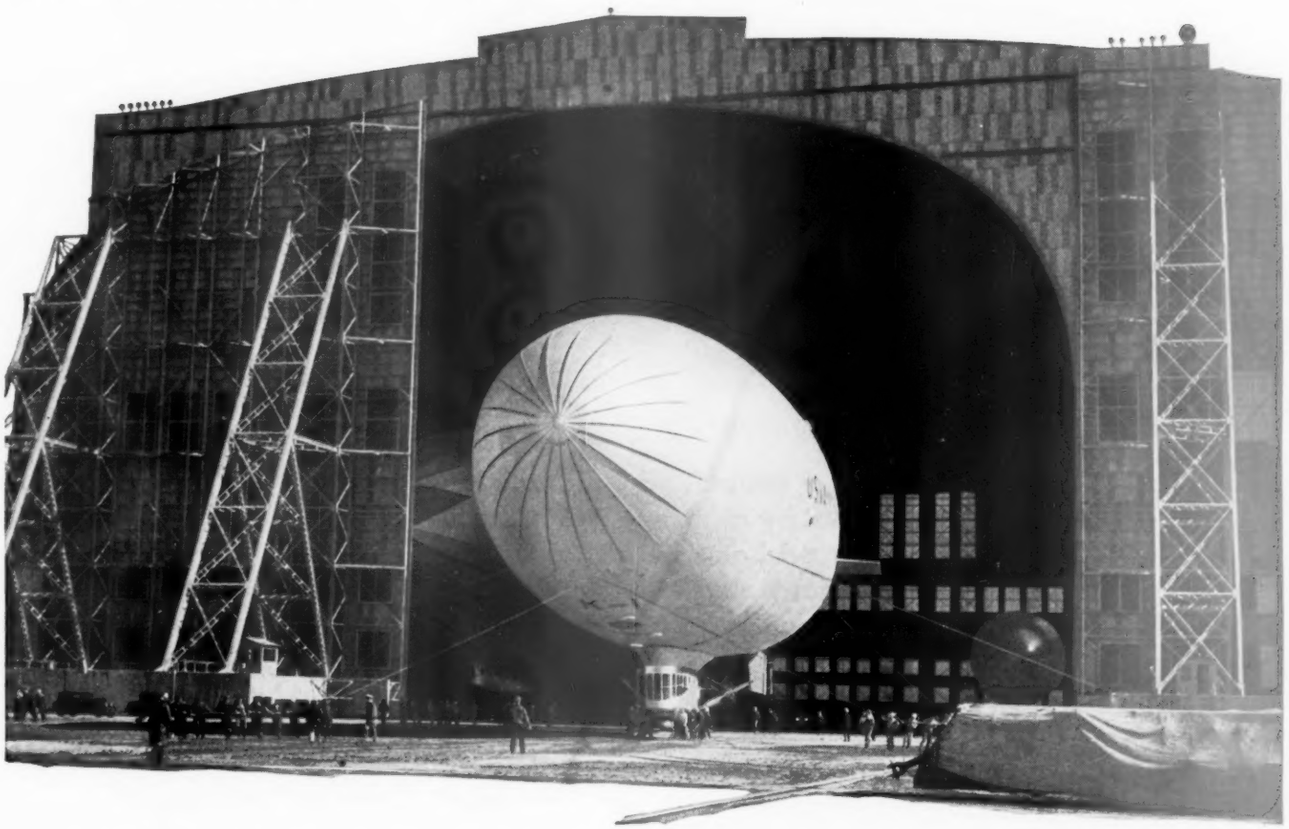
PURE THREE POINT LUBRICATION
A Complete Line of Industrial Petroleum Products

PURE

A Pure Oil engineer will help solve your lubrication problems. Write today.

OIL CO.
CHICAGO U.S.A.

K&M CORRUGATED ASBESTOS HAS GIVEN 20 YEARS OF MAINTENANCE-FREE SERVICE ON U. S. NAVAL HANGAR



● All industrialists know the value of maintenance-free buildings. Here is one so big that no less than 40 freight cars were needed to haul the Keasbey & Mattison Corrugated Asbestos used for its walls. It is the hangar at the Lakehurst Naval Air Station.

Throughout the twenty years of its existence, this 40-carload expanse of K&M "Century" Corrugated Asbestos has needed no maintenance whatever. Not far from the seacoast, it is exposed to the severest weather conditions, including moisture inside as well as out. It has never needed paint for protection.

Official U. S. NAVY PHOTOGRAPH

The camouflaged appearance of this hangar is produced by inherently colored K&M sheets, available on special order.

This is the kind of economical, maintenance-free service you can expect from "Century" Corrugated on any type of building you may erect. Made of enduring asbestos-cement by Keasbey & Mattison methods, it is fire- and weather-resisting, rust-proof and rot-proof. Why not let "Century" Corrugated cut down your own building maintenance cost? Write Dept. 05 for complete catalogue information.

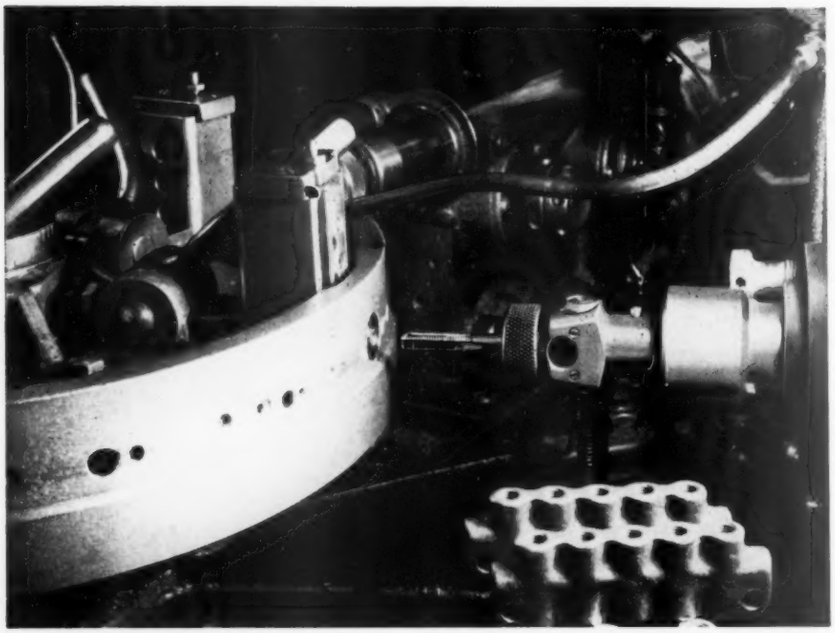
K&M *"Century"* CORRUGATED ASBESTOS

KEASBEY & MATTISON

COMPANY, AMBLER, PENNSYLVANIA



When writing Keasbey & Mattison Company please mention Purchasing



"GTD Greenfield" Taps Chosen for this hard job

• Here's a ten-way double junction casting turned out by a big specialty manufacturer—10 tapped holes in each cast-iron piece. The company saves itself money by using "G.T.D. Greenfield" 5/16-24 Ground Thread High Speed Steel Bottoming Taps—to the tune of 240 completed holes per hour. Don't figure tap "savings" on the cost of the taps. Figure on cost per tapped hole. "Greenfield" can help you and will work out tests runs on your own work to prove it.



Greenfield Tap & Die Corporation
Greenfield, Massachusetts
Detroit Plant: 2102 West Fort St.
Warehouses in New York, Chicago, Los Angeles and San Francisco.
In Canada: Greenfield Tap & Die Corp. of Canada, Ltd., Galt, Ont.

GTD GREENFIELD
TAPS · DIES · GAGES · TWIST DRILLS · REAMERS · SCREW PLATES · PIPE TOOLS

James Bothwell has been appointed Purchasing Agent for the Seattle-Tacoma Shipbuilding Co., with headquarters at Seattle, Wash.

Arthur T. Saunders, Purchasing Agent of the Allied Paint Co., Tulsa, has been named Vice President of that organization and a member of its Board of Directors. In addition to his purchasing duties, Mr. Saunders is chief chemist of the company and in charge of plant operations.

Neil A. Gallagher, formerly Purchasing Agent for the Stein-Bloch Co., Rochester, N. Y., and more recently advertising executive for the Sibley, Lindsay & Curr Co. of that city, has been appointed publicity director for Rich's department store in Atlanta, Ga.

J. Earl Williamson of Elmira, N. Y., has been appointed chief commodity group buyer for the Quartermaster Corps, U. S. Army, with offices in Washington, in charge of purchasing building materials and supplies for the new Army cantonments throughout the country. For the past five years, Mr. Williamson has been Deputy Procurement Officer of the U. S. Treasury, in charge of purchases for federal emergency agencies in seventeen counties of southern and central New York.



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DROP US A CARD
asking for detailed information about No. 1303 Case Sealing Glue — Purchasing Agents in the country's largest industries everywhere, tell us it is the most dependable and economical. There's no obligation, write today.

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Among the ASSOCIATIONS

District Conference at Birmingham

The first annual district conference of *District No. 1, N.A.P.A.*, was held at the Redmont Hotel, Birmingham, Alabama, November 9th, with delegates from the associations at Birmingham, Chattanooga, Louisville and New Orleans in attendance. Harlan E. Cross of the Sloss-Sheffield Steel & Iron Co., District Vice President, was in charge of the meetings, assisted by H. J. Belcher of the Birmingham Electric Co., President of the Birmingham Association.

A business survey report for the district, presented by George H. Cole of the Alabama Power Co., stressed the factors which may be counted on to sustain business levels after the stimulus of the national defense program has passed, and to cushion the letdown which may be expected when these large orders are no longer available. The report cited the improving diversification of southern industry and agriculture, the development of a large paper industry based on southern timber resources, improvements in transportation and elimination of marketing restrictions which are opening a wider field of distribution for southern products. It pointed out the relatively high operating rates of the southern iron and steel industry, and urged Purchasing Agents of that area to study and promote the use of products of local origin.

Luther Fuller, Manager of the Farm Products Division, Tennessee Coal, Iron & R. R. Co., also spoke on the topic of diversification, suggesting that agricultural colleges would do well to stress this feature and the marketing of products. Under present practice, large quantities of farm products are shipped into Alabama that could well be raised there. As a particular example of progress, he cited the raising of sweet potatoes and the new dehydrating process producing a meal which is richer in carbohydrates than corn. He predicted a rapid expansion of such dehydrating plants and the consequent growth of the beef cattle industry now concentrated in the corn belt of the middle west.

Other speakers at the conference included George A. Renard, Executive Secretary-Treasurer of the N.A.P.A., New York; R. H. Mangum, Assistant Vice President of the Alabama Power Co.; Dean Paul Chapman of the University of Alabama; James M. Alexander, Purchasing Agent of the Cavalier Corp., Chattanooga, former Vice President of N.A.P.A.; and T. A. Corcoran of the *Courier Journal* and *Louisville Times*, Louisville, Ky., former Vice President of N.A.P.A.

The program also included a reception and cocktail hour, attendance at the Alabama-Tulane football game, and a banquet session.



NOVEMBER 1

PORTLAND—Luncheon meeting of the *Oregon Association*, at the Mallory Hotel. Speaker: W. W. Henry, Chairman of the Milk Producers Association, "The Milk Control Act."

NOVEMBER 4

HOUSTON—Luncheon meeting of the *Houston Association*, at the Rice Hotel. Motion picture, "Excursions in Science," presented by courtesy of the General Electric Co., represented by E. M. Wise, district manager, and W. F. Hildebrand, sales engineer.

BRIDGEPORT—Dinner meeting of the *Salesmen and Purchasing Agents*

Reflecting Continual Improvement and Refinement, Including Developments of Exceptional Interest During 1940 . . .

LUNKENHEIMER *STEEL VALVES*

. . . ARE "CORRECTLY ENGINEERED" FOR MAXIMUM ECONOMY ON THE JOB!

No. 9 OF A SERIES



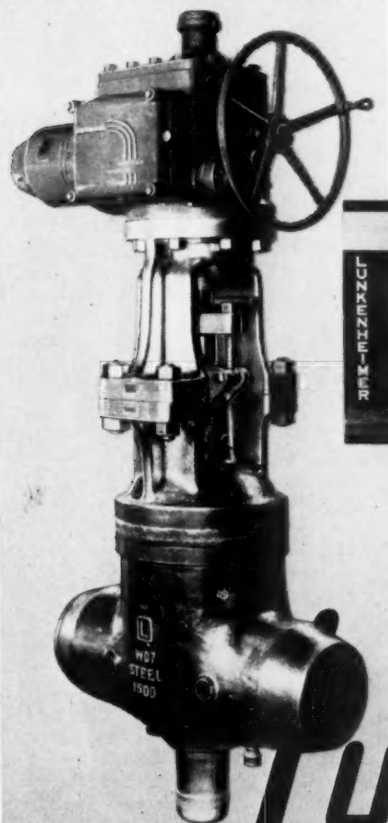
● Due to the peculiarities of their service requirements, involving as they do unusually high temperatures and pressures, the business of designing and producing steel valves becomes a highly specialized one . . . one which requires constant research, development, and engineering experience. In this particular field, Lunkenheimer has taken an important lead in improving and refining both the design and materials used . . . the two special steel gate valve patterns illustrated being truly representative of this "engineered superiority."

Lunkenheimer Steel valves are available in a wide range of types and sizes and in a variety of body as well as trim materials to suit all prevailing service requirements. And, as new conditions develop, Lunkenheimer's constant program of reseach and improvement promises the surest, most dependable solution to whatever new problems are encountered.

LUNKENHEIMER 1500 LB. S. P. STEEL GATE VALVE with Welded Bonnet for Burlington and Marion Generating Stations—Public Service Electric & Gas Company.

SEEING IS BELIEVING! We welcome the unusual opportunity afforded by the Power Show in New York to describe Lunkenheimer products in detail and point out visible points of superiority which assure better, longer, lower cost service. In addition to the two big steel valves illustrated, you'll find a variety of bronze and iron body bronze mounted valves for your careful inspection.

LUNKENHEIMER 2500 LB. S. P. "TWIN BRANCH" STEEL GATE VALVE, Seal Welded Bonnet with Breech Lock (Patent Applied For) for Twin Branch Generating Station — Indiana & Michigan Electric Co.







Send for copy of our new Catalog No. 78. We will include our handy "Guide," which makes selection easy by grouping valves, boiler mountings, and lubricating devices according to pressures, temperatures, and service applications.

●

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LUNKENHEIMER

14-9A-40

Association, at the Hotel Stratfield. Motion pictures of western life. Plans were made for the Christmas party, at which John Walters will serve as toastmaster and general chairman, assisted by a committee including Frank Kall, George Cote, T. J. Russell, L. R. Watkyns, Joseph D'Louhy, and Edward Shaw.

NOVEMBER 6

ASHLAND, MASS. — Plant visit of the *New England Association*, at the Warren Telechron Co., featuring the manufacture of precision parts and the conveyor assembly system.

NOVEMBER 7

HOUSTON—Meeting of the *Houston Association* as guests of the Hughes Tool Co., at the Gulf Brewing Co. Colored motion pictures were shown, depicting the new Hughes rock bit.

OIL CITY — Dinner meeting of the *Northwestern Pennsylvania Association*, at the Wanango Country Club. Speaker: John H. Lucas, Vice President of the Peoples Pittsburgh Trust Co. Discussion period led by D. F. Manion, Jr., of Manion Steel Barrel Co., Oil City, and W. E. Cooney of the National Ordnance & Forge Co., Irvine, Pa.

SAN FRANCISCO—Luncheon meeting of the *Northern California Association*, at the Palace Hotel. Speaker: Dr. Chauncey D. Leake, Professor of Pharmacology, University of California Medical School, "Industrial Toxicology."

NOVEMBER 8

PORTLAND — Luncheon meeting of the *Oregon Association*, at the Mallory Hotel. Speaker: Earl F. Campbell, Executive Secretary of the Portland Traffic Safety Commission, "What's Going On in Traffic Regulations?"

NOVEMBER 11

READING — Dinner meeting of the *Reading Association*, at the Iris Club. Round table discussion of commodity markets and trends, led by Frederick Moeser of the Doehler Die Casting Co., Pottstown.

NOVEMBER 12

MILWAUKEE — Dinner meeting of the *Milwaukee Association*, at the Elks Club. Speakers: Prof. Lee E. Lawrence, "Recent Developments in the Mediterranean," and Francis Gavigan, "Interpretation of the New 40-Hour Week, in Relation to Purchasing Agents and Their Assistants." Motion pictures of wild life were shown through courtesy of the Conservation Commission. The usual commodity round table was held preceding the regular meeting.

TULSA — Dinner meeting of the *Tulsa Association*. Forum discussion of Chapter 4, N.A.P.A. Handbook, "Buying the Right Quality."

NEW YORK—Dinner meeting of the *Metropolitan Purchasers' Assistants Club*, at Midston House. Speaker: Prof. George W. Barnwell of Stevens Institute of Technology, President of the Society for the Advancement of Management, "Our American Economic System and the Future." Round table discussion, "Outline of Purchasing Procedure Records," led by George A. Dietrich, Assistant Supervisor of Purchases for New York University.

SEATTLE — Eleventh annual Products Exhibit sponsored by the *Washington Association*, at the Olympic Hotel, presenting a comprehensive display of industrial materials, featuring Washington manufacturers and distributors' lines. Speaker at the banquet session was Judge Robert S. MacFarlane, Assistant to the President and Western Counsel of the Northern Pacific Railroad, "Frontiers." Carroll G. Holloway of Isaacson Iron Works, Association President, presided at the meeting, and John L. Locke of Fisher Flouring Mills Co., Past President and honorary member, served as toastmaster. Honor guests included Mayor Langlie of Seattle, Mayor Cain of Tacoma, and the presidents of the Manufacturers' Association of Washington, Seattle Chamber of Commerce, Everett Chamber of Commerce, Seattle Association of Credit Men, British Columbia P. A. Association, and Oregon P. A. Association. The committee in charge of the exhibit consisted of Karl L. Bates of Matthews Hardwoods (*Chairman*), Carl R. English of Pacific Coast Coal Co., Watt Fallis of Kenworth Motor Truck Corp.,



Fafnir Multiple Testing Machine determines bearing life at normal and 100% overload.

Tried and Tested Designs



Fafnir pioneering has never been guilty of rushing to market with an untried design, merely for the satisfaction of shouting "First!" Rather, Fafnir designs have been long in research, long in testing . . . perhaps years, before introduction to their markets * * But the score remains high . . . the list of Fafnir developments which have become standard in the industry justifies this creed: A new ball bearing design should best be proved *practical* before it is proved *first*. The Fafnir Bearing Company, New Britain, Connecticut.

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Howard Flanders of Seattle-Tacoma Shipbuilding Co., Roy C. Hull of E. I. du Pont de Nemours & Co., Frank A. Smith of Carnation Co., George S. Drury of Northwest Lead Co., and Earl C. White, Editor of the *Washington Purchasing Agent and Manufacturer.*

VANCOUVER — Dinner meeting of the *British Columbia Association,* at the Hotel Vancouver. Speaker: Jack Nunn of the Vancouver Pacific Paper Co., "The Romance of Paper."

OAKLAND — Luncheon meeting of the *East Bay Group, Northern California Association,* at the Lake Merritt Hotel. Motion picture commemorating American Education Week.

SAN FRANCISCO — Dinner meeting of the *Northern California Association,* at the Elks Club. Captain Dwight Long showed his colored film of four and one-half years' cruising on the "Idle Hour."

NOVEMBER 13

SPRINGFIELD, OHIO — Dinner meeting of the *Springfield Association,* at the Shawnee Hotel. Speaker: Mr. Hammond of the Hammond Drierite Co., Yellow Springs, Ohio, who discussed the program and accomplishments of the National Farm Chemurgic Council, of which he is a national officer. A general commodity discussion followed.

BUFFALO—Dinner meeting of the *Buffalo Association,* at the Lafayette Hotel. George E. Price, Jr., of the Goodyear Tire & Rubber Co., Akron, President of the N.A.P.A., was guest of honor and principal speaker.

NOVEMBER 13-14



CHICAGO — Twelfth Annual Products Exposition sponsored by the *Chicago Association,* at the Hotel Sherman. More than a hundred exhibits, displayed on the Mezzanine Floor, Main Exhibit Hall and Grand Ballroom, showed products of member companies and representative advertisers in the *Chicago Purchasor,* comprising a most interesting and informative exhibit.

Donald McGibeny, world traveler and news commentator, spoke at the Wednesday luncheon meeting on the topic, "Interpreting the News." A motion picture, "A New World Through Chemistry," was shown in the Grand Ballroom during the afternoon and evening.

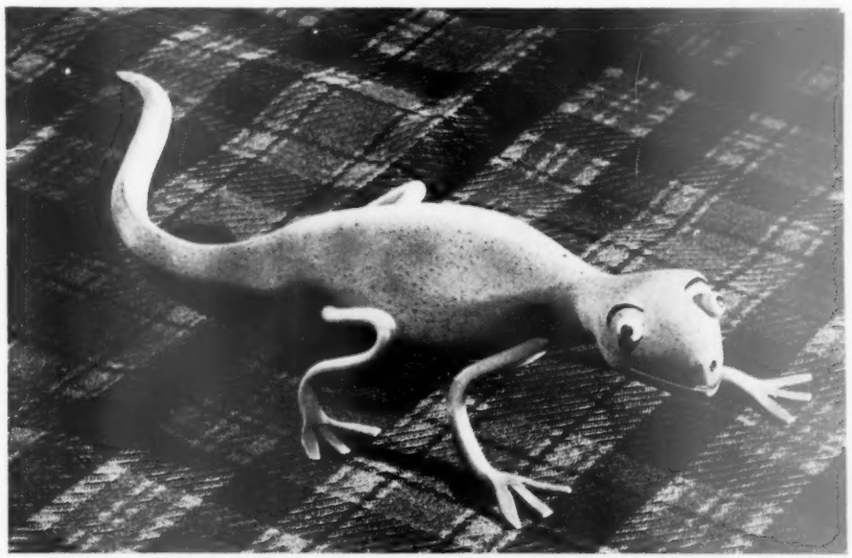
Lee Bussmann of St. Louis was toastmaster at the banquet session on Thursday evening. The principal speaker was Whiting Williams, author, investigator and consultant, who discussed, "What Are Workers Working For?"

The committee in charge of the exposition was as follows: *General Chairman,* M. J. Hartigan of Joseph T. Ryerson & Son, Inc.; *Vice Chairmen,* John W. Kleder of U. S. Sanitary Specialties Corp., and Walter Bautz of Chicago Rivet & Machine Co.; *Program and Entertainment,* A. G. Pearson of National Broadcasting Co.; *Committee Members,* G. J. Collinet of Barrett-Cravens Co., S. W. DeKoven of Excel Auto Radiator Co., John Donahue of Mojonnier Bros. Co., C. A. Goodall of Delta-Star Electric Co., G. W. Lerch of Hooker Glass & Paint Mfg. Co., E. C. Meier of Hills-McCanna Co., R. G. Oliver of S. G. Taylor Chain Co., Z. D. Sappenfield of Allen B. Wrisley Co., A. F. Schneider of Clearing Machine Corp., L. H. Weisbrod of Steiner Electric Co., George J. Stack of International Tag & Salesbook Co., H. E. Erickson of Continental Scale Corp., E. E. Swick of Operadio Mfg. Co. (St. Charles, Ill.), and Carl Hogberg of Bliss & Laughlin, Inc.

NOVEMBER 14

BIRMINGHAM — Luncheon meeting of the *Birmingham Association,* at the Redmont Hotel. Motion picture, "The Middleton Family at the World's Fair."

SPRINGFIELD — "National Night" dinner meeting of the *Western Massa-*



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Any mediocre chameleon can adapt himself to a plain-colored background, but it takes a real go-getter to come through when placed on a plaid!

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Ordinary adhesive problems we take in our stride, as a matter of course. It's on the tough ones—the "plaids"—that we can really demonstrate our ability and versatility. We invite your inquiries.

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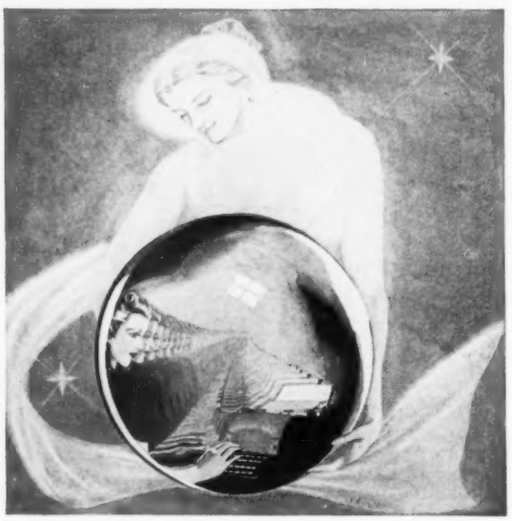
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Identified Ink and Fabric Products of Superlative Utility and Quality



PANAMA & BEAVER

chusetts Association, at the Kimball Hotel. Speakers: George E. Price, Jr., of Akron, and F. Albert Hayes of Boston, president and vice president of the N.A.P.A.

LOS ANGELES—Dinner meeting of the *Los Angeles Association,* at the Elks Club. Speaker: Carleton B. Tibbetts, President of the Los Angeles Steel Casting Corp., Vice President of the Los Angeles Chamber of Commerce, and General Chairman of the Defense Committee of Southern California, "Industrial Mobilization." Sound motion picture in color, showing scenes on the island of Tahiti, taken by Harry C. Chapman of the California Wholesale Electric Co.

DAYTON—Dinner meeting of the *Dayton Association,* at the Engineers Club. Speaker: Howard V. Clark, Sales Manager of the Sheet Division, Carnegie-Illinois Steel Corp., Pittsburgh, "Purchasing Agents I Have Met, or What I Would Not Do If I Were a Purchasing Agent."

NOVEMBER 14-16

CLEVELAND—The Midwest Purchasing Exhibit, sponsored by the *Cleveland Association* and the *Midwest Purchasing Agent,* at the Hotel Cleveland, an attractive and educational display of industrial products, featuring latest developments in factory and office equipment and supplies. The program in-

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cluded a luncheon meeting on the opening day, at which Hartley W. Barclay, Editorial Director of the Conover-Mast Publications, spoke on "Government Buying of National Defense Requirements." The banquet meeting was held on Friday evening, with A. G. Hopcraft as master of ceremonies, and with members of the Toledo Association present as special guests. Saturday was designated as "Shopman's Day," attended by plant superintendents, foremen, engineers, maintenance men and other operating officials. Prizes were awarded for the most informative exhibit, most attractive exhibit, most original exhibit, and most important national exhibit.

NOVEMBER 18

BOSTON—Dinner meeting of the *New England Association,* at Schrafft's. Speaker: Henry F. Long, Commissioner of Corporations and Taxation, Commonwealth of Massachusetts, "Taxation—How It Affects You." The meeting was preceded by an afternoon forum, at which Clyde J. Allen, combustion engineer of the New England Coal & Coke Co., discussed "Modern Trends in Coal Burning."

NOVEMBER 19

ST. PAUL.—Plant inspection visit of the *Twin City Association,* at the Minnesota Mining & Mfg. Co., followed by a dinner meeting at the St. Paul Athletic Club. Speaker: Fred Manley, division manager of the company.

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IN answer to ever-increasing and ever more exacting demands upon the steel industry, Carnegie-Illinois Steel Corporation (a subsidiary of U. S. Steel) built its new Irvin Works, the most up-to-date sheet mill in the world—pictured herewith—for the production of sheet steel and tin plate. Between Carnegie's ribbons of steel and Columbia's ribbons of silk—also streamlined in production proficiency—there is an analogy immediately apparent to every keen business man. Both ribbons of steel and ribbons of silk must have strength for the job to be done, quality to do it well, ability to do it economically.

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Carey Elastite ASPHALT TILE

This improved flooring—developed by CAREY research—is tougher and longer wearing—a flooring that can take a beating from wheeled traffic and yet that is resilient and comfortable for workmen. Withstands highly compressive loads and rough usage; reduces accidents and steps-up efficiency.

An ideal material for factory, warehouse and machine shop floors; loading platforms, offices, laboratories, stores. It is firesafe, moisture and weather resistant. Also specified for protection of built-up roofs subjected to traffic—makes them valuable for use as sun decks or recreational activities.

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Another Outstanding Advancement!

Again VICTOR leads—with the new VICTOR Unbreakable Special Flexible Hack Saw Blade. It is new in every way—new in looks, new in performance, new in steel, new in heat-treatment. Yet this outstanding blade sells at no advance in price.

PERFORMANCE The new VICTOR Unbreakable Special Flexible is guaranteed unbreakable in use in a frame. It offers unusual flexibility with the toughness of an all-hard blade and no teeth strippage.

METALLIC FINISH An all-over protective metallic black finish (patented) prevents rust and provides immediate identification. Only the black blade with yellow marking is a VICTOR tungsten blade.

COMPLETE SPECIFICATIONS PLAINLY MARKED The length, number of teeth, type, thickness, width and make are clearly printed in yellow on every blade. This helps in proper blade selection.

BETTER IN USE Consider the features which make this new VICTOR blade better in use: unsurpassed flexibility, greater toughness, longer cutting, a protective finish and clearly marked. No wonder workmen are enthusiastic about it.

VICTOR introduced the "Moly" blade with the all-over gold finish—then introduced the modern metal box—now it pioneers again with a new flexible blade in an all-over metallic finish.

*PACKED IN MODERN METAL BOXES

There are also four styles of VICTOR Hack Saw Frames designed especially for VICTOR Blades—buy the proper Frame to fit the Blade.

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TUNGSTEN & "MOLY"

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ST. LOUIS — Annual Executives' Night Meeting of the *St. Louis Association,* at the Hotel Statler. Speaker: Col. Harrington W. Cochran, U. S. Army, "St. Louis Civilian Defense." In connection with the address, motion pictures from the Military Department of Washington University were shown, illustrating the effects of aerial bombardment in European cities and indicating the steps necessary to prepare a city against this type of warfare. There was a brief discussion of the business outlook, and the following executives spoke briefly: E. T. Gushee, Executive Vice President of the Union Electric Co. of Missouri, E. J. Miller, President of the St. Louis Screw & Bolt Co., P. B. Postlethwaite, President of the Wagner Electric Co., George Smith, Executive Vice President of Century Electric Co., and R. L. Lund, Executive Vice President of Lambert Pharmacal Co.

PITTSBURGH — Dinner meeting of the *Pittsburgh Association,* at the William Penn Hotel. The speaker was F. S. Dauwalter, Assistant General Manager of the National Board of Fire Underwriters, who discussed the work of his organization, a particularly timely subject in view of the extra hazards involved in the current armament program.

NEW YORK—"National Night" dinner meeting of the *New York Association,* at the Builders' Exchange Club, honoring George E. Price, Jr., of Akron,

When Most Trucks Quit- Fairbanks Say "Go"

Fairbanks steel-frame Platform Trucks are practically everlasting because parts subject to wear and abuse are protected by heavy steel angle irons. You'll marvel at the extra years of service you get from

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If the platform or other parts are broken accidentally, they can be easily and cheaply replaced.

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N.A.P.A. President, Glenn C. Parsons of Buffalo, Vice President for District No. 8, Harold K. LaRowe, National Director, and George A. Renard, Executive Secretary-Treasurer. Speaker: Howard Coonley, Chairman of the Walworth Co., "The Purchasing Executive's Obligation in the Defense Program." The meeting was preceded by a forum discussion on "Shipping Containers and Related Items," led by Don Lyons of the Johns Manville Co. Among the specific points considered were:

1. Actual effect of war on the supply of pulp in the U. S. Is there a shortage? What steps are being taken to adjust any shortage that exists in particular grades of pulp and paper?
2. What effect will the National Defense program have on container supplies and prices?
3. What part do the new southern board mills play?
4. What is present buying policy on shipping containers? On folding boxes? On paper?
5. Can Purchasing Agents contribute toward a more orderly market, or is that beyond their control?
6. On specifications (a) To what extent are incoming shipments checked against specifications? (b) How much detail should be included in specifications for test cartons? For non-test cartons? (c) When is Cylinder Kraft specified? When Fourdrinier? (d) What influence is the Beach Testing Machine having on specifications? (e) To what extent are

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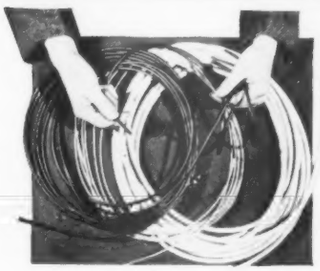
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Extruded Plastic Tubing in Continuous Lengths for Electrical Insulation in Many Industries.

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XTE-100 is used where highest temperatures are encountered, XTE-30 for all other applications.

Other IRVINGTON Insulations include Varnished Fiberglas, Duck, Silk and Paper; Varnished and Extruded Plastic Tubings; Composite Slot Insulation; Insulating Varnishes; Protective Paints and Enamels; Oil Stop; Coil Sealing Insulation.

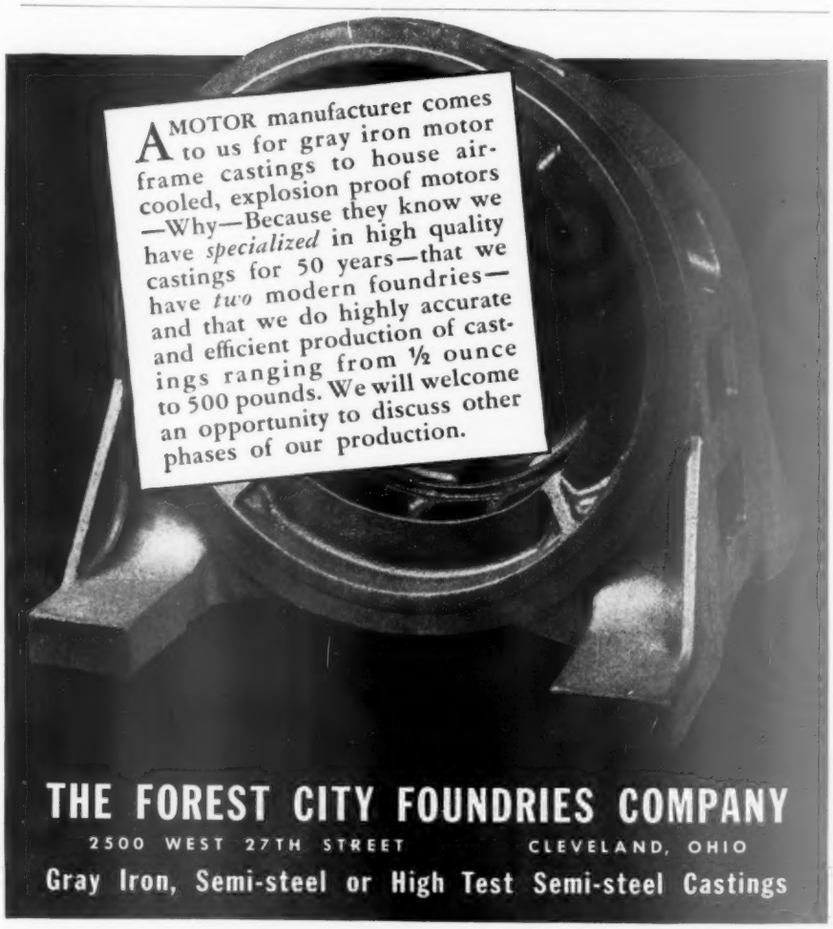
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Representatives in 20 Principal Cities

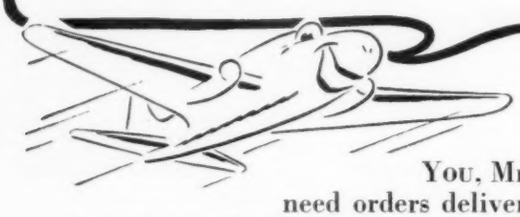


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compression tests used? (f) How is the color or shade of ink on printed cartons controlled?

Brief commodity reports were presented as follows: *Steel,* George Guldner; *Non-Ferrous Metals,* Henry Meyer; *Fuel Oil,* Harold K. LaRowe; *Machine Tools,* Carleton Reynell; *Textiles,* C. K. Johnson; *Paper,* Edward Bantel; *Chemicals,* Harry Barnett.

DETROIT — Annual Thanksgiving party of the *Detroit Association,* in the General Motors Auditorium.

LOUISVILLE—Dinner meeting of the *Louisville Association,* at the Kentucky Hotel. Speaker: Dr. H. E. Fritz, head of the synthetics development program of the B. F. Goodrich Co., Akron, "Synthetics and Their Relation to National Defense."

HARTFORD—Dinner meeting of the *Hartford County Association,* at the Hotel Bond. William Farnham of the Roger Sherman Transfer Co. spoke on his personal observation of the European situation. William Gagnon, president, and all other officers of the association were reelected for the coming year.

NOVEMBER 20

BALTIMORE — "National Night" dinner meeting of the *Baltimore Association,* at the Lord Baltimore Hotel.



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Complete Starrett Catalog No. 26-P lists over 3500 Precision Tools, Dial Indicators, Steel Tapes, Rules, Hacksaws, Ground Flat Stock, etc. If you buy tools, be sure you have a copy. Write for one.

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STARRETT TOOLS
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Speakers: George E. Price, Jr., of Akron, and Glenn C. Parsons of Buffalo, President and District Vice President of the N.A.P.A.

ERIE—Dinner meeting of the *Erie Association*, at the Press Club. Technicolor sound film, "The Middleton Family at the World's Fair," presented through courtesy of the Westinghouse Electric & Mfg. Co.

NOVEMBER 22

PORTLAND—Luncheon meeting of the *Oregon Association*, at the Mallory Hotel. Discussion of the publication policy of the *Oregon Purchasing News*.

MASSILLON—Dinner meeting of the *Canton & Eastern Ohio Association*, at the Massillon Club. Speaker: Chester Stoner, "Business After the War."

NOVEMBER 25

PROVIDENCE—Dinner meeting of the *Rhode Island Association*, at the Narragansett Hotel. Speaker: Raoul E. Desvernine, President of the Crucible Steel Co. of America, "American Business in the Light of Political Developments Here and Abroad." The meeting was preceded by an afternoon commodity forum led by Carl P. Riegger of the Grinnell Company.

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for BROKEN CONCRETE

Avoid accidents! Prevent costly delays! Repair holes, cracks, broken places in concrete floors or resurface an entire area with the durable RUGGEDWEAR RESURFACER. No chopping or chipping required. Merely sweep out spot to be repaired—mix the material—trowel it on. Holds solid and tight up to irregular edge of old concrete. Cellulose-Processed to provide a firmer, tougher, smoother, more rugged wearing surface. Used indoors or out. Dries fast. Costs only 10c to 14c per sq. ft.

Valuable 68-page "HAND BOOK OF BUILDING MAINTENANCE" available to those requesting on business letterhead.



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Please send me complete RUGGEDWEAR information . . . details of FREE TRIAL OFFER —no obligation.
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Company .....
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EASTERN
Midget Pumps



In every industry there is constant need for these amazingly efficient, low-cost centrifugal pumps. Small enough to be carried in one hand—with performance equal to that of much larger and more expensive pumps. This catalog describes the entire line of Eastern Pumps, giving full data and performance charts.

Mixers and Laboratory Equipment



Wherever mixing operations are carried on, Eastern Mixing Equipment and engineering service are recognized as outstanding from the standpoint of both economy and faithful performance. Every mixing need, regardless of the nature or volume of the liquid involved, etc., is served better and at less cost by an Eastern Mixer.

Eastern engineering and consulting service provide the solution for many difficult problems every year in practically every industry in the country. Many of our Midget Pumps, for example, have been developed for very specialized purposes, but have immediately found wide application in other fields. We invite correspondence relative to all mixing and pumping problems, and will gladly consult with you on any difficulties you may be encountering.

EASTERN ENGINEERING CO.
61 Fox Street New Haven, Conn.

HOUSTON—Luncheon meeting of the *Houston Association,* at the Rice Hotel. Speaker: Gavin Ulmer, attorney, "An Unfriendly World."

NOVEMBER 26

ALAMEDA—Luncheon meeting of the *Northern California Association,* at the Hotel Alameda, as guests of H. G. Prince & Co.

SEYMOUR—Dinner meeting of the *Connecticut Association,* at the Swan Memorial. Speaker: Dr. J. Anton de Haas, Professor of International Relations, Harvard University, "Economic Problems Ahead."

TULSA—Dinner meeting of the *Tulsa Association,* at the Chamber of Commerce. "Good Painting Practice," a talk by H. H. James, district representative of E. I. du Pont de Nemours & Co., illustrated with colored slides. Reports on the annual meeting of the American Petroleum Institute at Chicago, by H. W. Ladd of Stanolind Oil & Gas Co., O. E. McClatchey, chairman of the N.A.P.A. Oil Company Buyers Group, and H. M. Cosgrove, executive secretary of the association.

NOVEMBER 27

ROCHESTER—Dinner meeting of the *Rochester Association,* at the Roch-

this MODERN HARPER PLANT makes ONLY non-ferrous and stainless fastenings





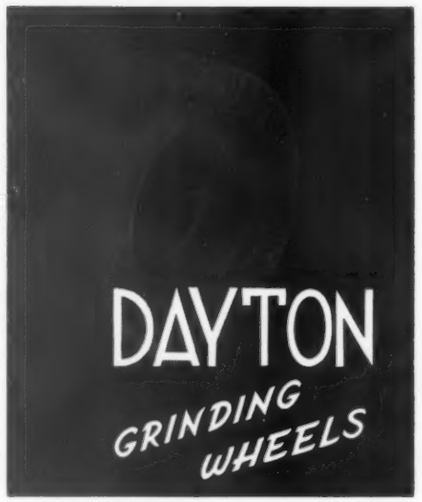
ONE COMPLETE manufacturing unit that manufactures BOLTS, NUTS, SCREWS and WASHERS out of everything EXCEPT IRON and STEEL.

Cap Screws of BRASS, Lag Screws and Hanger Bolts of BRONZE, Bolts and Screws in EVERDUR, Washers, Rivets and Nuts of MONEL and most every type of STAINLESS fastenings you could require. Every popular type and size in all the alloys.

That's the story — 3600 STOCK ITEMS in every alloy except iron and steel and plenty of production equipment to make those small troublesome specials you need right now.

Send for the 72-page Harper Catalog — "Bible" of the non-ferrous and stainless fastening industry. The H. M. Harper Company, 2606 Fletcher St., Chicago.

HARPER Chicago



A finer grinding wheel preferred by leading firms. Specify any type, size, grain, bond, or grade.

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DAYTON, OHIO
Factories at Buffalo, Beloit, Cleveland, Dayton

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B. & O. Motor Coaches stop at our door.

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BROADWAY AT 34th ST., NEW YORK

Under KNOTT Mgt. John J. Woelfle, Mgr.

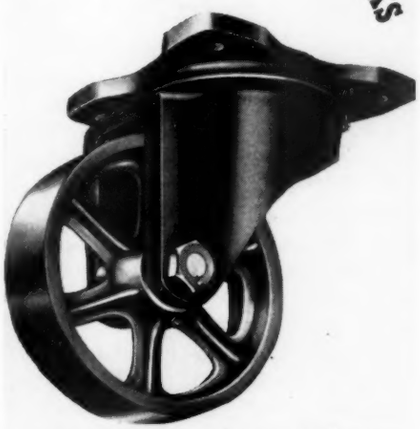
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CASTERS

FROM TEA TABLES TO TEN TON TRUCKS



THERE ARE SIZES AND TYPES OF BASSICK CASTERS FOR EVERY NEED



WHEN YOU BUY CASTERS SPECIFY Bassick

BECAUSE —You buy the product of the largest manufacturer —and the leader in the caster business.

BECAUSE—You buy a quality product backed with a guarantee of satisfactory service.

BECAUSE —You buy the economy of quantity production.

Bassick distributors are conveniently located for prompt delivery, and factory representatives are at your service. Just call or write.

Complete Catalog on Request

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Bridgeport **Connecticut**
Division of the Stewart-Warner Corp., Chicago, Ill.
Canadian Factory:
STEWART-WARNER-ALEMITE CORP. OF CANADA, LTD., BELLEVILLE, ONTARIO

ester Club. Speaker: Prof. Howard T. Lewis of the Harvard Graduate School of Business Administration, assistant to the Coordinator of National Defense Purchases, "This Business of Defense."

NOVEMBER 28

SAN FRANCISCO—Luncheon meeting of the *Northern California Association*, at the Palace Hotel. "Associated Oil Radio Day," with program in charge of A. Urry.

BIRMINGHAM — Luncheon meeting of the *Birmingham Association*, at the Redmont Hotel. Discussion based on Brady's "Materials Handbook," led by President Jack Belcher.

SEATTLE—Luncheon meeting of the *Washington Association*, at the Washington Athletic Club. Educational sound motion picture, "Seeing Is Believing," dealing with gasoline, good and bad.



Ranging from calendars to candlesticks, this amazing new 912 page Merchandiser is the complete answer to your Good Will Gift considerations for 1940-41. Simply indicate your problems, addressed to department P on your business letterhead, and this big free book will be on your desk within a few days.

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ACE STAPLING MACHINES



ACE STAPLE REMOVER
Saves finger nails, prevents torn papers. Every stapling machine operator should have one.
60¢

ACE dependable, continuous, trouble-free PERFORMANCE, EFFICIENCY and ECONOMY has won over a million friends.
ORDER FROM YOUR STATIONER
*EAST OF ROCKIES

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Makers of the World's Best Stapling Machines
3415 N. Ashland Ave. **Chicago, Ill.**



● Many purchasing agents have found that the lowest bid is not always the best buy. Receiving room costs frequently change the entire picture. The net cost is always increased by receiving, handling, unloading. But often, much of this cost is unnecessary. For example, in the unloading of carload freight, there is considerable needless expense when old-type braces have to be removed.

ACME *Unit-Load* PROCESS TELLS ANOTHER STORY

How different it is with ladings braced with Acme Unit-Load bands! It takes only one snip of each strap to remove the shipment easily and quickly. Unloading is easier, faster and more economical. Insist on shipments braced with Acme Unit-Load—and you will be virtually assured of minimum receiving room costs. Not only you, but the supplier will benefit—his shipping and handling costs will be substantially reduced.



Receiving room costs will be at rock-bottom for the consignee of this shipment, braced securely by Acme Unit-Load. Unloading will be fast, easy, economical.

GET THE FACTS ABOUT ACME STRAP PURCHASE PLAN

By purchasing Steelstrap and Unit-Load band on the Acme Strap-Buying Plan you can effect important economies. The coupon below will bring you full information. There is no obligation.

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ACME STEEL COMPANY
2842 Archer Ave., Chicago, Ill.
☐ Furnish complete information about the Acme Strap Purchase Plan.
☐ Mail a copy of "Stopping Profit Leaks," a story of the advantages of Acme Steelstrap.

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ACE STAPLING MACHINES

Clinch Friendships for Life!
PERFECT IN EVERY PERFORMANCE

MILLIONS Prefer ACE EFFICIENCY and ECONOMY

Lifetime Guarantee OF FAITHFUL TROUBLE-FREE STAPLING SATISFACTION

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"ACE" STANDARD
Our popular leader, representing the highest achievement in stapling efficiency for Lifetime Jam-proof Service. Uses Standard Staples-210 Capacity.

$4*



"ACE" PILOT
A medium-size all steel, precision built machine. Performance unmatched in its price range. Uses Standard Staples-210 Capacity.

$3*



"ACE" CADET
A sturdy small machine, same construction, as the Pilot with shorter magazine. Uses Standard Staples-105 Capacity.

$4.50*



"ACE" CLIPPER PLIERS
Lightweight, easy action, yet built for lifetime performance. Uses Undulated Staples-210 Capacity.

ACE STAPLE REMOVER
Saves your finger-nails ..prevents torn papers. Every stapling machine operator should have one.
60¢*
*EAST OF ROCKIES



ORDER FROM YOUR STATIONER

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3415 N. Ashland Ave. Chicago, Ill.

LOS ANGELES—Luncheon meeting of the *Los Angeles Association,* at the Chamber of Commerce. Round table discussion on "Current Economic Problems," led by Cliff Walker of Turco Products Co.

NOVEMBER 29

MENOMINEE FALLS, WIS. — Bowling party of the *Milwaukee Association,* at Held's Recreation Rooms. Buffet lunch and prizes. The committee in charge consisted of Lloyd Greiner, Carl Failmezger, Elmer Wustrack and Harry Hernsheim.

* * *

Merle Patten, Purchasing Agent for the Union County (N.J.) Park Commission, addressed the employees of that organization last month at Elizabeth, the talk being one of a series designed to acquaint all park workers with the various phases of the departmental operation.

Stuart F. Heinritz, Editor of PURCHASING, addressed the Lions Club of Holyoke, Mass., November 14th, on the topic, "Purchasing for National Defense."

J. Porter Tanner of Owensboro, Ky., has been appointed assistant to State Purchasing Agent Marion C. Howard.



Only WIREGRIP *Belt Hooks*
have the patented blue Aligning Card that holds hooks in position, prevents them from loosening, prevents hook loss from handling prevents waste of short ends. Every WIREGRIP Hook to the last one can be used.

Flexible BELT LACING
STEELGRIP is a stronger lacing for all power and conveyor belts. Clinches smoothly into belt, compresses the ends, prevents fraying, 2-piece hinged rocker pins prevent excessive wear. In boxes or long lengths.



Write for Catalog

ARMSTRONG-BRAY & CO.
"The Belt Lacing People"
321 N. Loomis St. Chicago, U. S. A.

SALT LOSS CAUSES HEAT FAG
WORKERS WHO *Sweat* NEED *Salt*
• USE MORTON'S SALT TABLETS •
Morton Salt Co., Chicago, Illinois



When your pickling, plating, heat treating or conveyor cycle puts excessive wear on the wire mesh basket you can cut operating cost by ordering

JELLIFF WELDED-FRAME MESH BASKETS.

Developed to meet a specific need, JELLIFF'S line of *Welded* fabricated baskets illustrate our specialization on this important link in the chain of economical operation.

Jelliff Heat Treating Mesh Baskets are made of Inconel and other heat resisting alloys in a variety of sizes and shapes.

Send for Bulletin giving the resistance to chemical action of various acids and alkalis to baskets made of Aluminum, Brass, Copper, Monel, Inconel, Nickel, Stainless Steel, Iron, etc.

Ask your Plating Superintendent what literature he has on file on the subject of wire baskets. You'll be surprised at the dearth of information and be all the more pleased with the helpful Jelliff illustrated Bulletin.

Sales representatives, working from key cities, completely cover the country.

P.A.'s Check List

Screen Cloth	Fabricated Screen Parts
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Insect Screen	Dipping Baskets
Lektromesh	Metal Filter Cloth

Write Jelliff for Specific Needs on Above

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C. O. Jelliff Mfg. Corp.
Southport .. Connecticut



Here's how to get the wire rope you want

when you want it

When you need wire rope in a hurry to keep things moving on the job, here's how to get it when you want it:

Pick up your 'phone and call your nearby Bethlehem distributor. Distributors of Bethlehem Wire Rope are doing business all over the country—in oil fields, timber country, mining and industrial districts—everywhere. Bethlehem distributors all stock rope in the exact grade of steel, and with the design, center, and lay to handle any type of job. Every one of them is set up to get moving the minute your call comes in. You'll like their brand of service.

BETHLEHEM STEEL

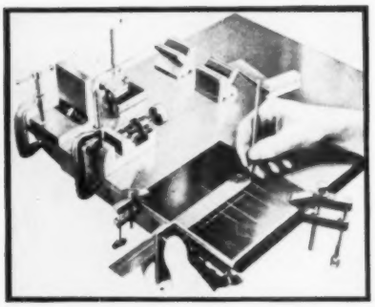
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New PRODUCTS · IDEAS



LOW COST SURFACE PLATES



■ **For years,** shop men who wanted accurate, convenient surface plates for layout work have been forced either to purchase high priced, hand-scraped precision plates, or else use plates that were more or less makeshifts without squared edges or ledges for clamps. To meet this obvious want, the Delta Manufacturing Company of Milwaukee, Wis., has announced two surface plates, measuring 15" x 8" x 3" and 16" x 22" x 3" that give the user everything he needs at a fraction of the cost of hand-scraped precision plates. These new surface plates provide a true surface to start with, a massive design and properly ribbed casting to insure the surface remaining true, ledges at the edges of the plate for clamping purposes, and edges that are square with each other and square with the face. In addition, these plates may be made into precision plates by simply scraping to a master plate or to each other.

VOLTAGE TESTER

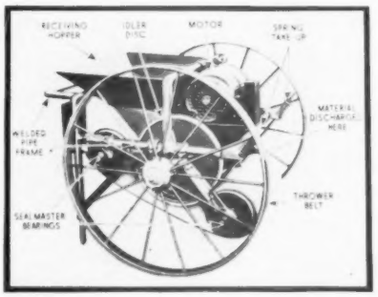


■ **A number** of improvements have been made by Square D Company, Detroit, Mich., on their voltage tester. This device indicates voltage by the position of the pointer in relation to a graduated scale.

The use of different colored bands for each a.c. voltage, together with increased travel of the pointer at the higher voltages, makes possible easier readings. The a.c. is distinguished from d.c. by the vibration of the pointer, which is flush with the outside of the case to prevent injury. The operating mechanism has been strengthened and improved to provide even greater accuracy.

The long, rubber-covered lead wires are fitted with hooks and with sharp points for piercing wire insulation without damage. Steel strands in the wires make the leads capable of resisting considerable strain without breaking. Fiber handles insulate the leads which are armored at the entrance to the case to prevent wear or breakage.

LOADER AND PILER



■ **Several** important improvements in the construction of the loader and piler have been announced by Stephens - Adamson Mfg. Co., Aurora, Ill. All loaders are now equipped with permanently sealed, self-aligning, prelubricated ball bearing units. Due to the dusty conditions under which these machines normally operate in loading bulk materials into box cars and into piles, this improvement is resulting in a **minimum of maintenance attention** and **maximum power savings.**

A simplified means of adjusting the alignment of the belt has been adopted. To facilitate adjustment of this alignment, a screw control now protrudes from the bearing through the front of the loader frame, so that to move the bearing forward or backward and thereby adjust the alignment, it is only necessary to turn this control to right or left with an ordinary wrench.

PLASTICS IN AIRCRAFT CONSTRUCTION

■ **Modern bombers** and fighters are now using laminated Phenol fabric construction for "air plane tabs" which are inserted in aileron and tail surfaces to "trim ship" on level flight and to increase maneuverability at excessive speeds.

These tabs are lighter, stronger and more rigid than the metal parts used previously. Likewise they facilitate mass production and reduce manufacturing costs. The Taylor Fibre Company, Norristown, Pa., is producing these airplane tabs to various manufacturers' specifications.

PAINT CONDITIONER

■ **A 1941 model** paint conditioner was unveiled recently at the plant of Landon P. Smith, Inc., in Irvington, N. J. New features demonstrated by George L. Lee, president of company, include: (1) Adapter which permits conditioning of four 1-quart cans of paint at once. (2) Timing device which automatically stops operation at end of any predetermined conditioning period up to 15 minutes. This automatic timer will be standard equipment at no extra charge. (3) New pedestal base which places unit at counter height and is designed to take up all vibration.

R-E-L-A-X, Mr. Steel Buyer . . .

Let this Free Service save you time and effort!



With requisitions multiplying overnight . . . mill schedules growing longer by the hour . . . time becoming increasingly precious . . . why swamp yourself with *unnecessary* details? Why squander time and energy following mill orders—week after hectic week—when you can unload your chores on Frasse . . . and relax.

The moment you place your mill order with Frasse, *your* work is finished. Frasse does the worrying for you. In constant teletype communication with the mills, Frasse will keep you posted on rolling and shipping schedules . . . arrange Army or Navy inspection . . . "keep tabs" on your order after shipment . . . relieve you of all the nagging, harrying detail work.

The cost? Not a cent. You get nationally known steels, at current delivery schedules. You pay only the regular mill price. *There are no extras.*

Why tolerate burdensome—*needless*—detail-work a minute longer? Place your mill order for mechanical steels with Frasse today!

Then lean back . . . . . and relax.

Peter A. FRASSE and Co., Inc.

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- SEAMLESS AND WELDED TUBING • STAINLESS STEELS • COLD FINISHED BARS
- TOOL STEELS • DRILL ROD • C. R. STRIP AND SHEETS • MUSIC WIRE

When writing Peter A. Frasse and Co., Inc. please mention Purchasing



STENCIL AND BACKING SHEET



■ **A revolutionary idea in stencils** has been developed by Pittsburgh Typewriter & Supply Co., Pittsburgh, Pa. Perfectly snow white bone dry backing sheets are used with a coated strip of soluble gum glue across the top. When you want to use a stencil, you just moisten the gummed strip on backing sheet, then place a stencil sheet, and let it fall down to place. Run your finger over it, as in sealing an envelope, and you have a completed and perfect stencil all ready to use.

The stencil can be used four ways: you can put the stencil in typewriter as is, just stencil and backing sheet, and write, you can put a sheet of cotton-like tissue between stencil and backing sheet and write, you can put a sheet of carbonized paper between stencil and backing sheet; and you can put a sheet of cellophane on face of stencil and write or trace on face of cellophane and it cuts through stencil. Thus you can get light, medium, heavy or just beautiful printing, whichever your fancy dictates. Test it all ways to see which pleases you, then stick to that. No other stencil gives you this choice.

PACKAGING NUTS, BOLTS, SCREWS



■ **Modern merchandising** has lifted nuts, bolts and screws out of the "cracker barrel" days and given them sales appeal in smartly designed packages.

For years, the Central Screw Company of Chicago like others in the field, sold their countless products in bulk. There seemed no place for packaging technique in this business until the company began to receive orders for boxed goods—a demand which was met with a wide assortment of ordinary cardboard boxes.

In cooperation with T. Barry Hodge, Ltd., Chicago package designers, an unusual packaging technique was developed in which modern merchandising, color and design were combined to the advantage of both the manufacturer and the trade, as shown in the illustration.

The new package means faster, easier assembly; stronger, more durable construction; simplified labeling by machine; reduction of box sizes from 9 to only 6; plus savings in time and work that are paying for the entire packaging program.

For the trade, it provides attractive silent salesmen that are easily identified for quick sales—boxes that stand up under the heaviest store traffic and stimulate repeat business.

LIGHT WEIGHT LADDER

■ **An aluminum** straight ladder, weighing only 1 lb. per foot but strong enough for all ordinary uses, has been introduced by the Aluminum Ladder Company, Tarentum, Pa.

The extreme light weight of this ladder carries with it the important advantage of easy portability, rugged construction and low cost, the latter achieved by use of light-gauge aluminum in its construction. For these reasons the ladder is recommended for many industrial purposes such

READING-PRATT & CADY
VALVES
Primary Products of American Chain & Cable

ACCO TRADE MARK

OTHER ESSENTIAL PRODUCTS OF AMERICAN CHAIN & CABLE CO., Inc.

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CHAIN—Weed Tire Chains
Welded & Weldless Chain & Attachments
AMERICAN CHAIN DIVISION

CABLE—Tru-Lay Preformed Wire Rope and Crescent Non-preformed Wire Rope
Tru-Loc Fittings—Tru-Lay Control Cables
AMERICAN CABLE DIVISION

BRAKES—Tru-Stop Brakes for Trucks & Buses
Tru-Level Oil Controller
AMERICAN CABLE DIVISION

CUTTING MACHINES—Wet Abrasive Cutting Machines—Nibbling Machines
ANDREW C. CAMPBELL DIVISION

CHAIN BLOCKS—and Trolleys
FORD CHAIN BLOCK DIVISION

WIRE ROPE—Lay-Set Preformed Wire Rope
Nonpareil Non-preformed Wire Rope
"Korodless" (Stainless Steel) Yacht Rigging
Aircraft Control Cables
HAZARD WIRE ROPE DIVISION

AUTOMOTIVE EQUIPMENT—for garages and service stations
MANLEY MANUFACTURING DIVISION

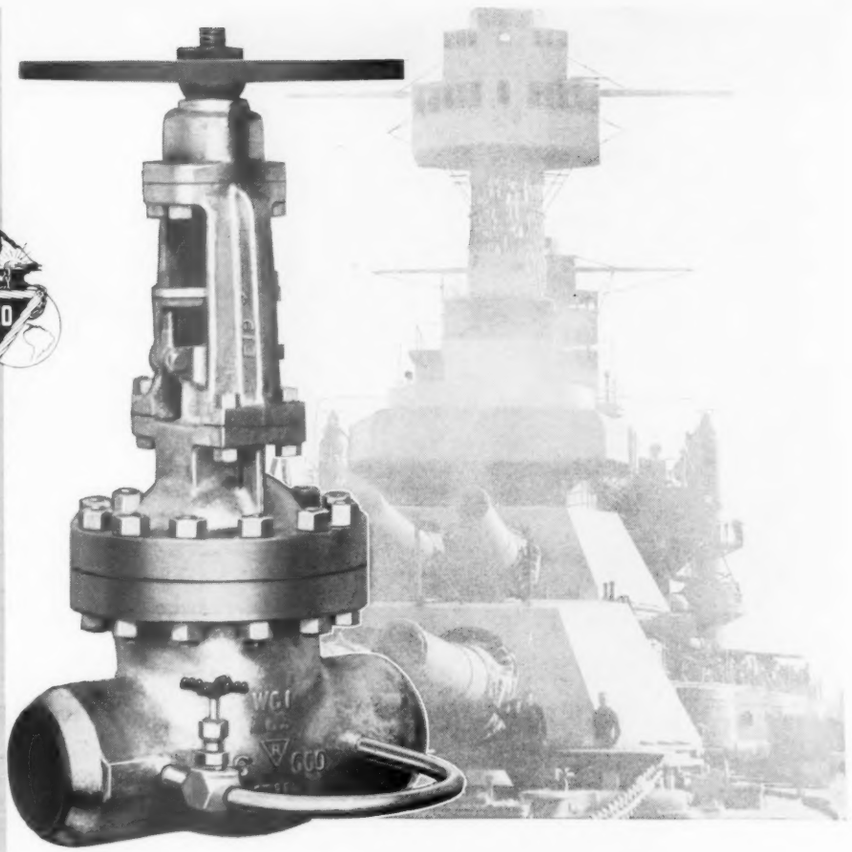
SPRINGS—Owen Springs and Units for Mattresses and Furniture
OWEN SILENT SPRING COMPANY, INC.

FENCE—Page Fence, Wire and Rod Products, Welding Wire
PAGE STEEL AND WIRE DIVISION

VALVES—Brass, Iron and Steel—and Steel Fittings
READING-PRATT & CADY DIVISION

CASTINGS—Electric Steel Castings and Malleable Iron Castings
READING STEEL CASTING DIVISION
AMERICAN CHAIN DIVISION

HOISTS and CRANES—Wright Chain Hoists, Electric Hoists, Cranes
WRIGHT MANUFACTURING DIVISION



Safeguarding Power
to Produce Armor Plate
Requires Dependable Valves

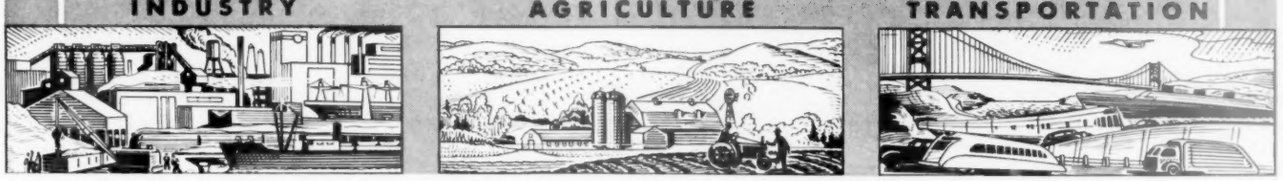
★ To meet its responsibility in the challenge of national defense needs, America's largest manufacturer of armor plate recently equipped its great mill with a new steam plant capable of producing power for tremendous demands. For that all-important power plant the engineers specified **Reading-Pratt & Cady Valves** in the main steam and boiler lines. There these valves provide the dependable, trouble-free service that is essential to uninterrupted production of a vital commodity. • Reading-Pratt & Cady Valves, like other American Chain & Cable products—137 in all—are built to render performance beyond standard requirements, and to deliver quality that is true economy. A few of the 137 ACCO products are listed at the left.

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In Business for Your Safety

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INDUSTRY **AGRICULTURE** **TRANSPORTATION**



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O.Z. COUNTS ON P-K FOR THE "SQUEEZE"



AVOIDS "DOUBTFUL" SCREWS BY USING QUALITY-CONTROLLED PARKER-KALON SOCKET SCREWS

Great pressure is required in making this electrical connection permanently secure. It is no job for "doubtful" socket head cap screws. That's why O. Z. Electrical Mfg. Co., Inc. specifies PARKER-KALON and says: "The exceptionally high tensile strength more than meets our unusual requirements . . . tremendous pressure does not damage the socket . . . unvarying uniformity of dimension satisfies our own close tolerances."

Every manufacturer who seeks maximum protection against the troubles which may be caused by a few "doubtful" – imperfect – screws in a lot, is sure to be interested in the unique Quality-Control routine under which Parker-Kalon Socket Screws are produced.

WRITE FOR FOLDER AND SAMPLES – read about this routine and the amazing Parker-Kalon Laboratory which makes it possible to maintain a new high standard of quality in socket screws. Free samples and local distributor's name will also be furnished. Parker-Kalon Corporation, 202-204 Varick St., New York, N. Y.



Quality-Controlled

16-point test and inspection routine covers: Chemical Analysis; Tensile and Torsional Strength; Ductility; Shock Resistance under Tension and Shear; Hardness; Head diameter, height and concentricity; Socket shape, size, depth and centricality; Class 3 Fit Threads; Clean-starting Threads.



PARKER-KALON
COLD-FORGED
Socket Screws

as in oiling and in making general repairs to machinery, building maintenance, sign painting, and other outdoor activities such as fruit picking which involves frequent moving of ladder by a single workman. It is particularly valuable for airplane use.

DYE FOR FLOORS



■ **Laboratories** the world over have been fighting alkali in concrete for years. Alkali, common in concrete, prevents the use of 97% of the floor paints on the market. This difficulty has been overcome by persistent laboratory development on a dye for concrete floors which can also be used on wood.

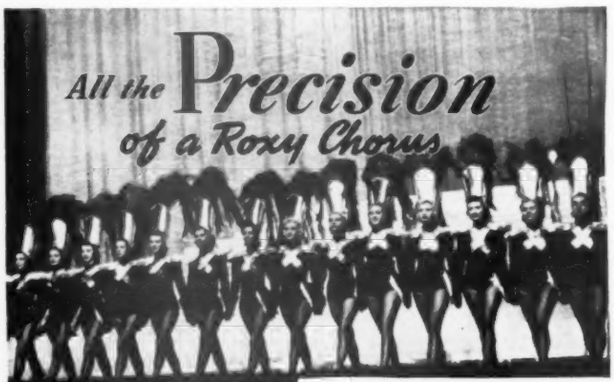
It comes in four colors:—battleship gray, linoleum brown, tile red, and emerald green.

In addition to being alkali-proof, it has withstood tests of concentrated sulphuric acid, a 50% solution of water and sulphuric acid, carbolic acid, and spillage of alcohol ignited and burned until the alcohol has been totally consumed. These tests do not even mar the polish or gloss. Product of Flexrock Company, Philadelphia, Pa.

RUST PREVENTIVES

■ **A series** of rust preventives, including liquid rust-inhibiting non-drying products built from a newly developed base, is announced by E. F. Houghton & Co., oil and leather manufacturers, Philadelphia, Pa. This series also includes grease-type (non-drying) products; drying, hard-film products, semi-drying (waxy film) and soluble rust preventives.

The basic material provides a homogeneous film non-crystalline, with a high degree of cohesion as well as ad-



The flashing routine of the chorus is a thing of beauty because of the rhythm that has been pounded into it. Just so a machine, to be accurate, must have accuracy *built* into it. In machine shops and tool rooms where exactness is essential . . . where the finest precision work is done . . . you will find Dumore Precision Grinders on the job. They grind to tolerances of a tenth (.0001"), yet there are no more rugged grinders made. Ask your Industrial Distributor for a demonstration of these time-saving, cost-cutting tools. Or write for the latest catalog.



ONLY DUMORE GIVES YOU *ALL* OF THESE

- Lightweight for easy portability.
- 42,500 r.p.m.—without vibration.
- Wide selection of quick-change quills.
- 15 models from which to select.
- 25 years precision manufacturing experience.
- Top-ranking distributors conveniently located.

Dumore PRECISION *Grinders*

THE DUMORE CO. Dept. 350-M RracINE, WIS.

hesion to metals. It wets out the surface rapidly making a "non-tacky" unbroken film impervious to atmospheric conditions. It is described as the greatest advance in protection against ravages of rust since Houghton first began making rust preventives in 1869.

LIGHT-WEIGHT RESPIRATOR



■ **This respirator** is the lightest weight throw-away filter-type respirator yet to receive the U. S. Bureau of Mines approval. It is the result of constant research and development by engineers of Willson Products, Inc., Reading, Pa., who have been working to meet industry's demand for protection without loss of working efficiency.

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TWO-SPEED GEARED MOTOR

■ **Shockproof** geared motors are now available with a double winding, which, together with an interlocking switch, provides the operator with a choice of two speeds, changeable instantly at the pressure of a button.

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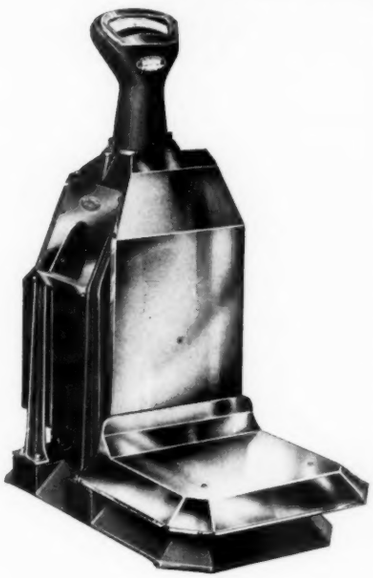
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Fig. 769
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Fig. 760
1-Bar Handle



Fig. 753
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Fig. 772
1-Rack



Fig. 757
2-Bar Handles

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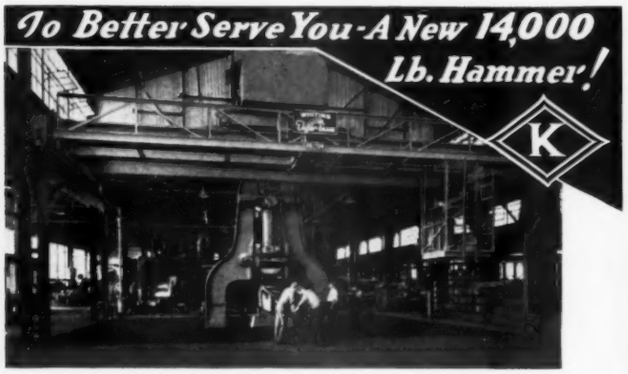
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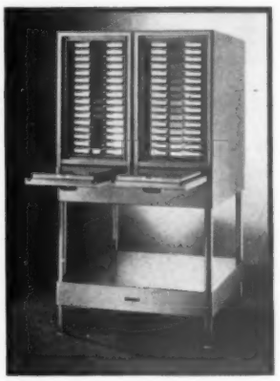
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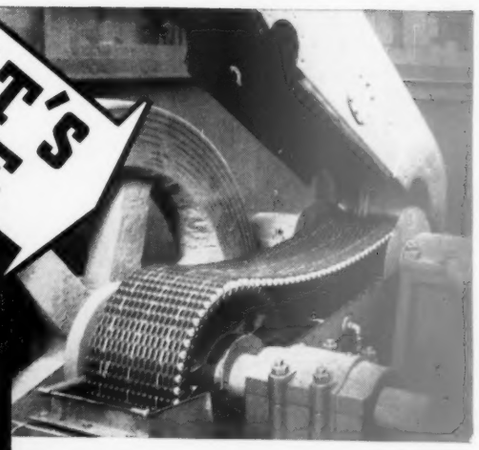
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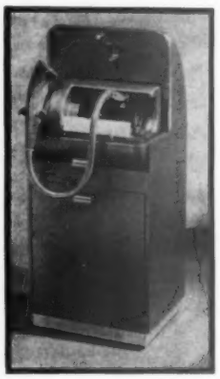
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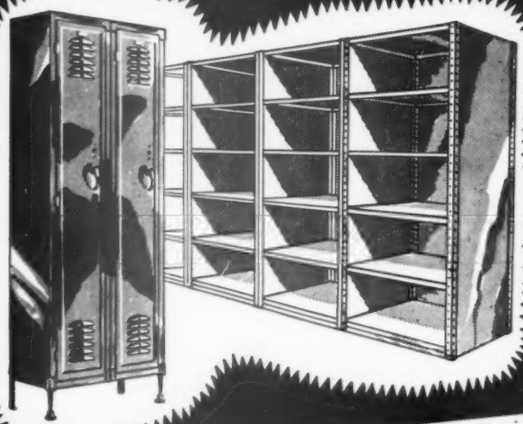
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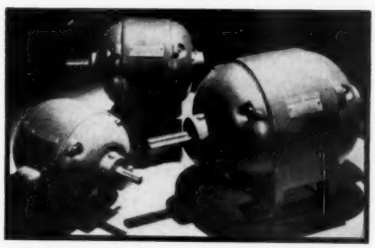


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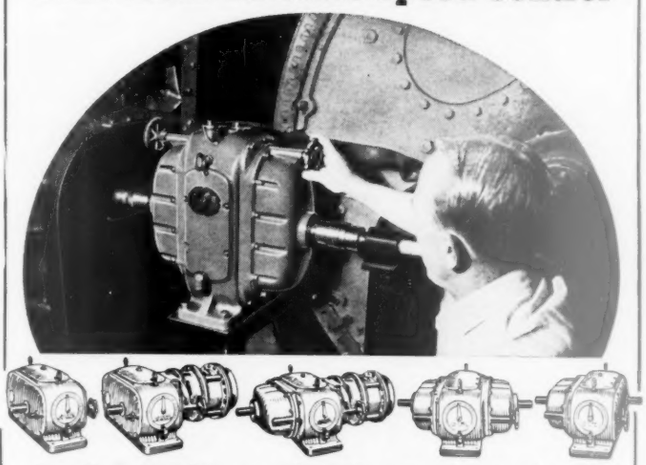
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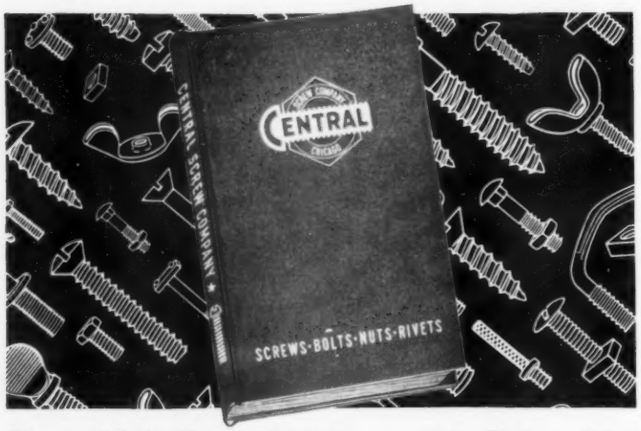
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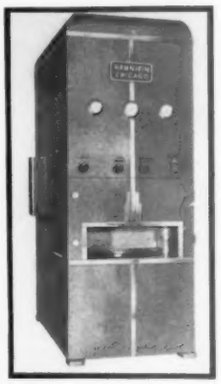
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■ **An immersion heater** for water heating and oil heating, embodying improved design and operating efficiency is being marketed by Edwin L. Wiegand Company, Pittsburgh, Pa. Capacities from 750 to 5000 watts inclusive.

Installed by bolting in place against a flat gasket seat (gasket furnished with heater). If tank or container is sheet metal, a companion flange or bushing holds the heater in place. Features include—patented heating element construction for efficient heat transfer, long life which these machines normally operate in loading bulk materials into box cars and into piles, this improvement is resulting in a **minimum of maintenance attention** and **maximum power savings.**

A simplified means of adjusting the alignment of the belt has been adopted. To facilitate adjustment of this alignment, a screw control now protrudes from the bearing through the front of the loader frame, so that to move the bearing forward or backward and thereby adjust the alignment, it is only necessary to turn this control to right or left with an ordinary wrench.

FREE AID ON YOUR Speed Reducer Problems

These Books Contain a Wealth of Helpful Information

● Here is just the help you want when you face the problem of selecting speed reducers. These books are packed with valuable technical data on Link-Belt Herringbone Gear, Worm Gear and Motorized Helical Gear Reducers — they illustrate and describe the features of each type and even show how to determine the right size and ratio for your particular application.

LINK-BELT COMPANY

Philadelphia, Chicago, Indianapolis, Atlanta, Dallas, San Francisco, Toronto. Offices in principal cities.

8262

Pur.1519-A —Herringbone Gear—for general all-around ruggedness, efficient high speed operation and ability to withstand shock loads.

Pur.1524 —Worm Gear —where large ratios, flexibility of arrangement and enclosed drives of the right - angle type or a variety of other shaft set-ups, are required.





Pur.1515 Motorized Helical Gear—a compact, self-contained combination of speed reducer and integral motor, requiring no base plate nor flexible coupling.

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THE SAFETY GRINDING WHEEL & MACHINE CO.
Est. 1889 Springfield, Ohio

OFFSET RISING COSTS *with* SIGNODE



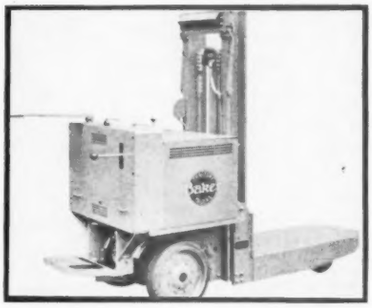
For example: Refractory brick is handled on skids faster and safer and carload braced faster and cheaper.

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INDUSTRIAL TRUCKS

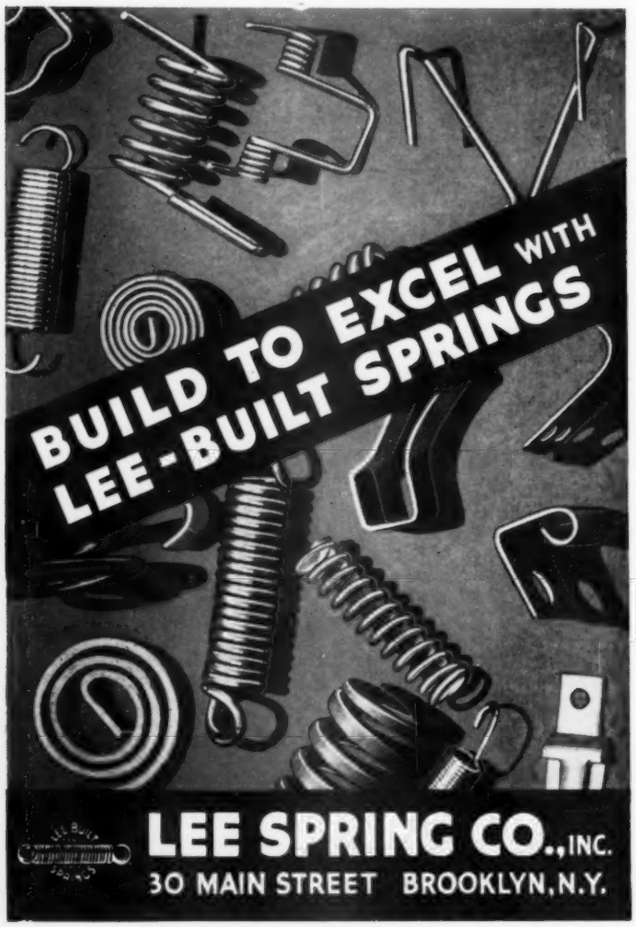


■ **The latest addition** to the line of industrial trucks manufactured by the Baker Industrial Truck Division of The Baker-Raulang Company, Cleveland, Ohio, is its Hy-Lift truck which is available in 4000-lb. capacity. This new model has been designed for operation in narrow aisles and congested areas, and has the following features: Efficient hydraulic lift. Lighter weight without sacrifice of strength or ruggedness. Shorter overall length. Accessibility—all controls and hiosts come grouped in convenient control panel. Absolute control of hoisting and lowering speeds.

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■ **Two designs,** designated as "Filet" and "Dartnet," have been added to the line of embossing patterns made by McLaurin-Jones Company, Brookfield, Mass. They are both attractive numbers, and reveal a wealth of beauty and charm which give an added appeal to the already interesting line of embossed papers.

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■ **The first** cold-setting resin adhesive ever produced in the U.S.A. is being manufactured and distributed by United States Plywood Corp., New York, N. Y. The product is bacteria-proof, rot-proof, stain-free and economical as well as waterproof and enduring.

This glue is easy to mix in cold water and can be used immediately after mixing. It requires no separate hardener to cause it to set; nor need heat be applied at any stage in its application.

In prolonged and severe tests in the laboratory and under toughest field conditions, in which a glue-line failure limit of 250 pounds hydrostatic pressure is allowable, the glue stood up under pressures as high as 1400 pounds with soft woods and 2500 pounds with mahogany and other hard woods. In none of these tests did failure occur at the glue-line. Wood failure occurred in every test.

NON-MAGNETIC STEEL

■ **An austenetic,** tough, non-magnetic steel containing 11 to 13½% manganese and 3¼% nickel is now carried in stock for immediate shipment by Joseph T. Ryerson & Son, Inc., Chicago, Ill.

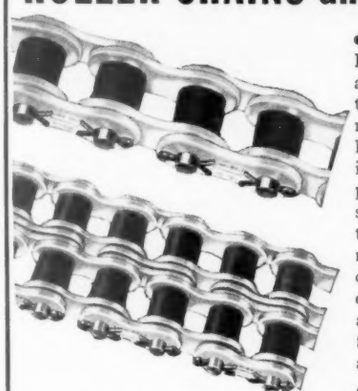
In making available a non-magnetic, abrasion resisting steel which can be welded, a real industrial need has been filled. For example, considerable weight can be saved in

In Stock for Prompt Delivery

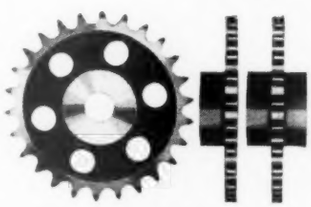
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Silverlink

ROLLER CHAINS and SPROCKETS



• The superiority of Link-Belt Silverlink roller chain and sprockets appeals to those who appreciate workmanship, durability, and low-cost service. Silverlink is made in ⅜" to 2½" pitch, in single and multiple strand types, including attachment links. Stocks carried at warehouses and by distributors throughout the country. This double arrow trade mark identifies genuine Link-Belt chains and sprockets.



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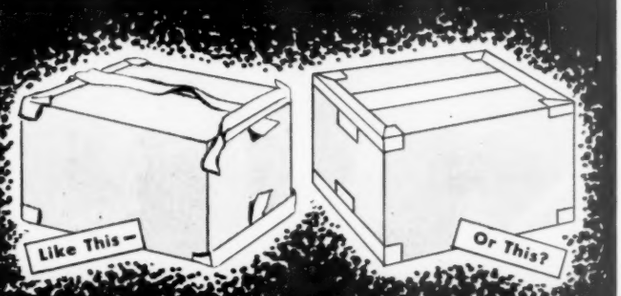
Various types and sizes are carried in stock for immediate delivery. Ask for Stock List No. PUR. 1557

LINK-BELT COMPANY

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8220

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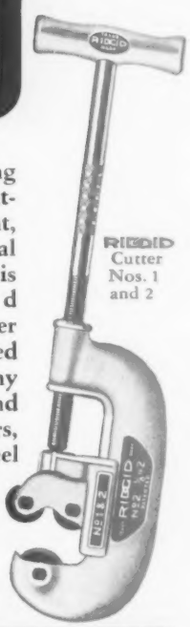
Moore & Thompson • Div. Hudson Pulp and Paper Co., 220 E. 42nd St., N. Y. C.

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IF you're not using RIDGID Pipe Cutters in your plant, you're missing real economies. For this modern standard RIDGID has a new-type thin blade cutter wheel of tool steel, forged and assembled in a solid steel bushed hub—to give many more clean quick cuts, saving time and money. There are also heavy-duty cutters, including a new trench type four wheel cutter. All are built to hold alignment, always cut true. For economy and better work, ask your Supply House for RIDGIDs.



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building composite structures by welding castings and manganal plates, using manganal only where necessary for wear resistance.

The 3½% nickel content permits manganal plates to be welded without a subsequent quenching treatment as there is no loss in toughness when manganal is cooled from the welding temperature. This makes a reasonable structural material of a composition that otherwise is difficult to handle. Welding rod of 18-8 stainless composition has been found to give very satisfactory results when used with manganal.

GAS-POWERED FINGER TRUCK



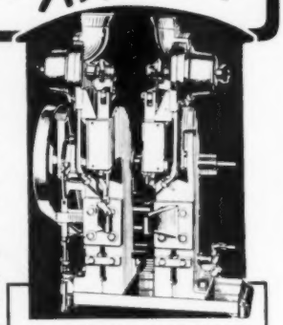
■ **Installation** of a gas-powered finger truck for towing, lifting, carrying and tiering has speeded handling operations, lightened the labor of the handling crew, increased its ton-per-hour capacity and has released a great deal of unskilled labor for more useful jobs elsewhere in the plant of Aladdin Industries, Inc., Alexandria, Ind.

The machine is shown carrying a 2,000-lb. load on its steel fingers and towing a 1,500-lb. load which it has previously placed on the trailer. The grade is 8% and the combined load by no means utilizes the machine's total capacity. The same machine has cut the cost of handling heavy dies from storage to press, has reduced the "down time" of the presses by quick change of dies and has decreased accidents by safer handling. The truck illustrated is a fork truck made by Clark Tructractor Co., Battle Creek, Mich.



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"WE USED to weld, stitch, and crimp a lot of assemblies in our plant, until Chicago showed us how much could be saved with rivets. Now we use multiple-setting and do a complete job with one machine stroke. We rivet different materials together, something we couldn't do before. We assemble finished parts, because Chicago rivets don't harm the finishes. And we turn out stronger, better-looking jobs, saving money at the same time."

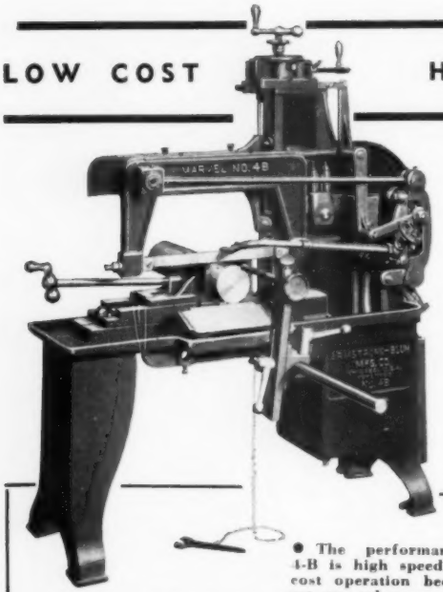


Set two rivets at once on any center distance from 7 16" to 7" with the Model 5S, the Chicago rivet-setter that combines flexibility with multiple-setting economy.

EXPERT RIVETING ADVICE—*Send a drawing, sketch, or sample assembly for free, complete production analysis. Learn what riveting can do for you.*

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Automatic and Manual Rivet-Setters for 1 to 4 Rivets at a Stroke

LOW COST HIGH SPEED



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- MARVEL 4-B shaper action high speed Hack Saw.
- Screw-feed. Ball-bearing saw frame. Quick action vise.
- Cuts 6" cold-rolled bar in 8 minutes —other sizes in proportionate time.

MARVEL

● The performance of MARVEL 4-B is high speed cutting with low cost operation because it will outcut any other saw in its price class. Has draw-cut and lift return giving blade longer life. Has accurate, rigid frame action. 6" x 6" capacity and a speed of 149 strokes per minute. MARVEL 4-B may be had with cabinet base and with 4 speeds.

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FOR INDUSTRY'S EVERY NEED
THE KRON CO.
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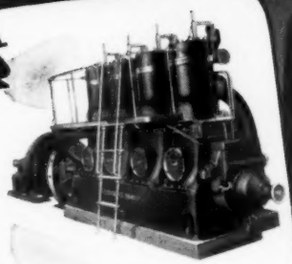
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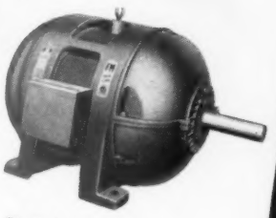
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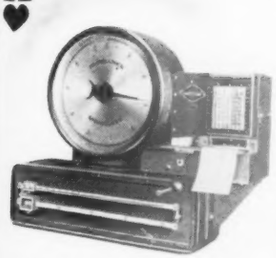
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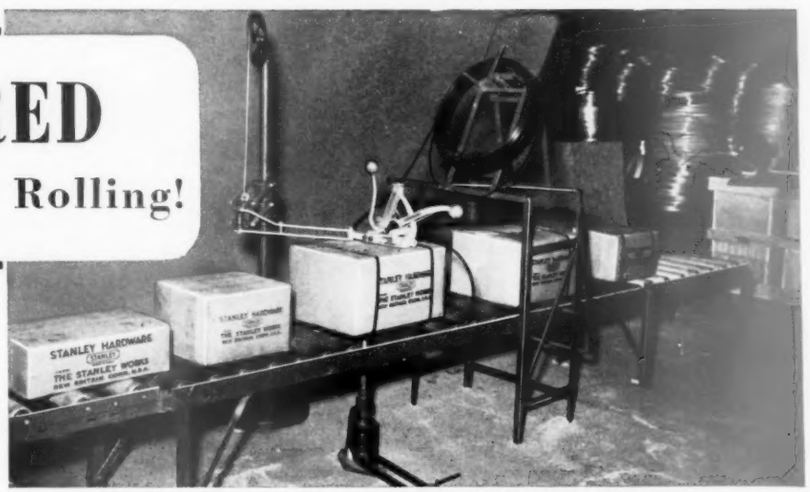
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TRADE MARK

STANLEY STRAPPING SYSTEM

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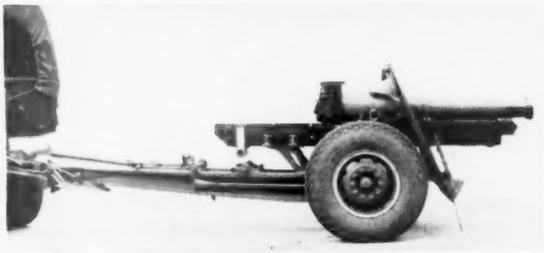
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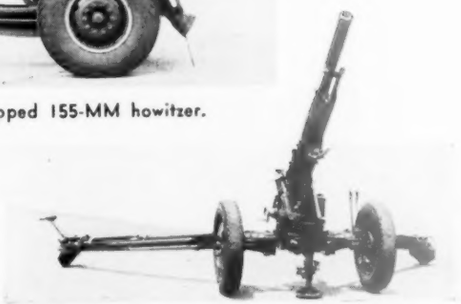
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Timken Bearing Equipped 155-MM gun.



Timken Bearing Equipped 155-MM howitzer.

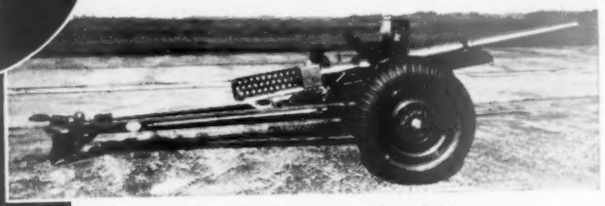


Timken Bearing Equipped 75-MM field gun.

For Defense

Wherever wheels and shafts turn, the extra strength, endurance and accuracy of TIMKEN Bearings are facilitating the mechanization of our military forces . . . both in the equipment itself and in the precision machinery necessary to produce it.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO



Timken Bearing Equipped 37-MM gun.

Timken Bearing Equipped light tank. ➡

Timken Bearing Equipped 4-ton truck. ⬇





Timken Bearing Equipped 1½-ton truck. ⬇

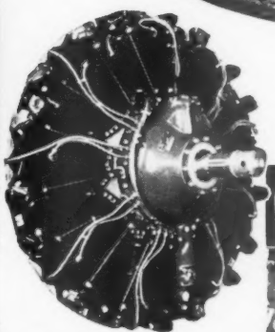




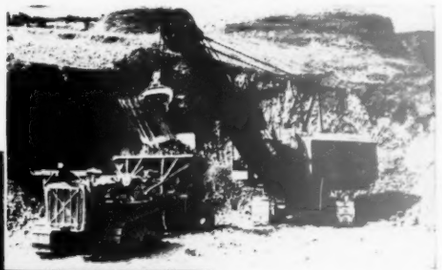
The U. S. Navy uses Timken Bearings in many kinds of equipment afloat and ashore.

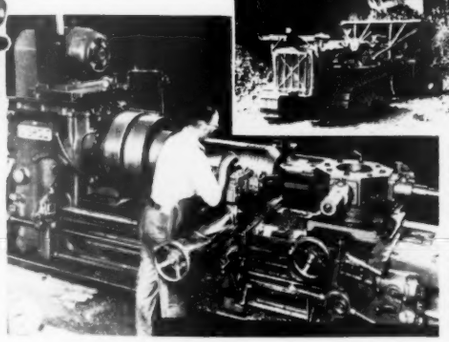
U. S. military airplanes take off and land on Timken Bearing Equipped wheels.





Power for U. S. war birds—Timken Bearing Equipped engines.





U. S. Army Engineers use a wide variety of Timken Bearing Equipped machines.

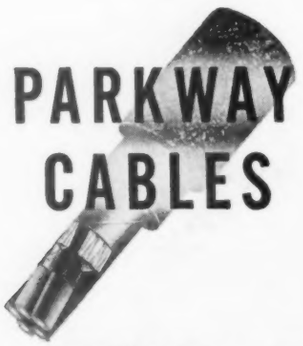
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